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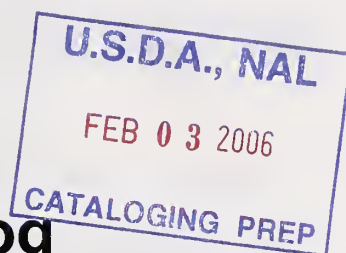
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United States  
Department of  
Agriculture

Forest  
Service

March 2005



# **Black-tailed Prairie Dog Conservation and Management on the Nebraska National Forest and Associated Units**

USDA Forest Service  
Rocky Mountain Region

## **Draft Environmental Impact Statement**

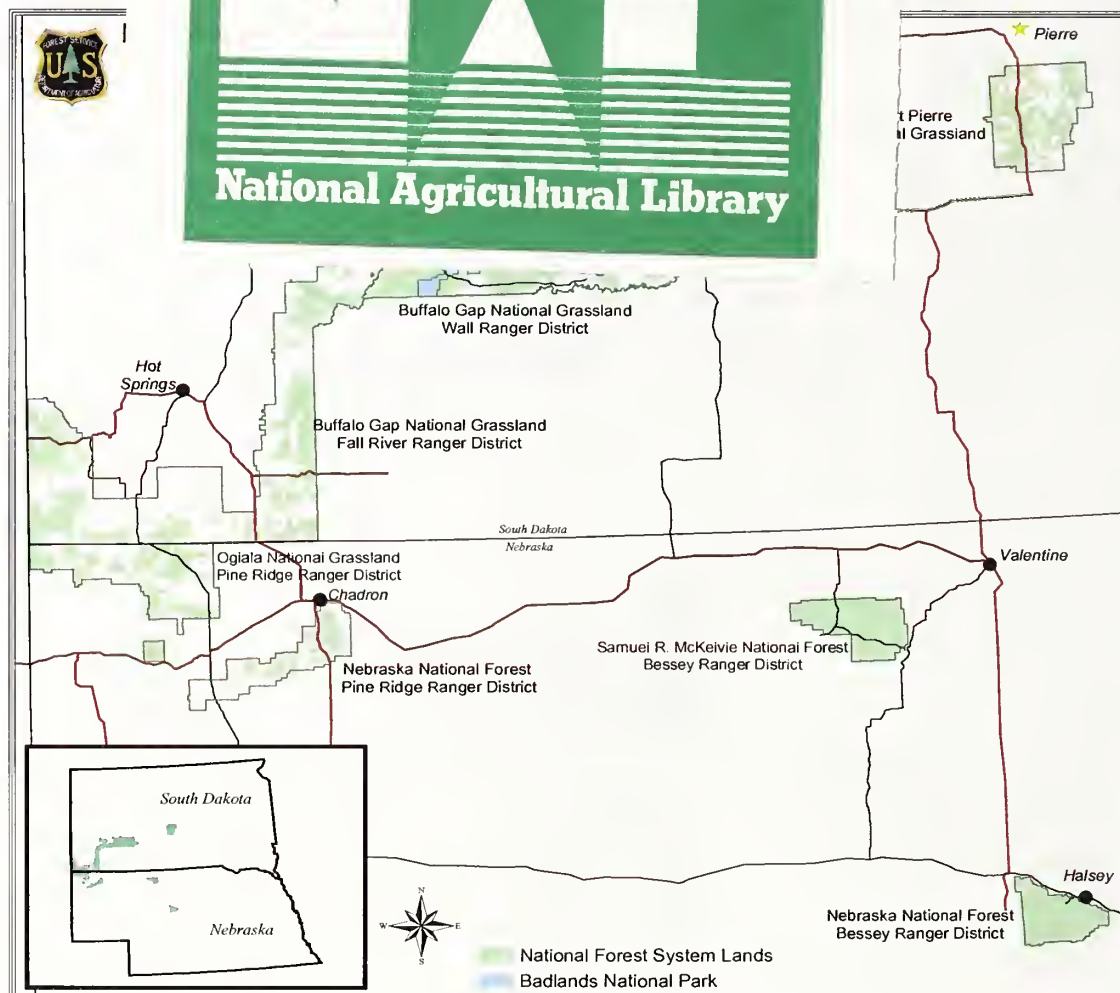
Located within Dawes, Sioux, Blaine, Cherry, Thomas Counties, Nebraska

And

Custer, Fall River, Jackson, Pennington, Jones, Lyman, Stanley Counties, South  
Dakota



Figure 1.





# **Black-tailed Prairie Dog Conservation and Management on the Nebraska National Forest and Associated Units**

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USDA Forest Service  
Rocky Mountain Region  
Nebraska National Forest

Located within Dawes, Sioux, Blaine, Cherry, Thomas Counties, Nebraska  
And  
Custer, Fall River, Jackson, Pennington, Jones, Lyman, Stanley Counties, South Dakota

Lead Agency: USDA Forest Service

Cooperating Agencies: State of South Dakota  
USDA Animal and Plant Health Inspection Service

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**ABSTRACT:** The Land and Resource Management Plan (LRMP) for the National Forest System lands in the project area established direction for black-tailed prairie dog conservation and that direction continues to be implemented. However, the LRMP deferred direction, pending issuance of state prairie dog plans, on how best to manage the species along property boundaries to reduce unwanted colonization of adjoining agricultural lands. The Forest Service has reviewed the recently issued South Dakota prairie dog plan for additional guidance and is in general agreement with the goals and intent of the South Dakota plan to manage for long-term, self-sustaining prairie dog populations while trying to reduce or avoid unwanted impacts to neighboring landowners. This Draft Environmental Impact Statement has been prepared to disclose the predicted environmental effects of implementing three alternatives for reducing unwanted prairie dog colonization of adjoining private and tribal lands. Alternative 1 relies primarily on non-lethal methods to manage and reduce prairie dog populations along property boundaries. Under Alternative 2, rodenticide use could be authorized in one-mile boundary management zones on national grasslands along private and tribal lands, pending on-site evaluations of complaints. Alternative 3 prescribes expanded rodenticide use and non-lethal management along boundary management zones that are 0.25 or 0.5 miles in width. Alternatives 2 and 3 continue, to the fullest extent possible, implementation of the prairie dog conservation direction in the LRMP.

**Note:** Reviewers should provide the Forest Service with their comments during the review period of the draft environmental impact statement. This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the final environmental impact statement, thus avoiding undue delay in the decisionmaking process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. *City of Angoon v. Hodel* (9<sup>th</sup> Circuit, 1986) and *Wisconsin Heritages, Inc. v. Harris*, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

Send Comments to:

Nebraska National Forest  
Attention: Prairie Dog DEIS Comments  
125 North Main Street  
Chadron, Nebraska 69337

Comments can also be emailed to: [comments-rocky-mountain-nebraska@fs.fed.us](mailto:comments-rocky-mountain-nebraska@fs.fed.us)  
Please include on the subject line: **Prairie Dog DEIS Comments**

**Comments will be accepted for 45 days following the date of publication of the Notice of Availability (NOA) in the Federal Register.**

## Table of Contents

List of Figures and Tables .....	6
Document Structure .....	9
Chapter 1. Purpose of and Need for Action.....	1
1.1 Introduction.....	1
1.2 Authorities .....	3
1.3 Purpose and Need for Action.....	4
1.4 Proposed Actions .....	6
1.5 Decision Framework.....	7
1.6 Public Involvement.....	8
1.7 Issues .....	8
1.8 Other Related Efforts .....	9
Chapter 2. Descriptions and Comparison of the Alternatives.....	11
2.1 Introduction.....	11
2.2 Alternatives Considered in Detail.....	11
2.3 Alternatives Considered but Eliminated from Detailed Study .....	20
2.4 Comparison of Effects .....	20
Chapter 3. Affected Environment and Environmental Consequences.....	26
3.1 Introduction .....	26
3.2 Air Resources .....	30
3.3 Soil and Water Resources.....	31
3.4 Heritage Resources.....	33
3.5 Paleontological Resources.....	35
3.6 Rangeland Resources.....	36
3.7 Species at Risk.....	38
3.8 Management Indicator Species.....	45
3.9 Recreation Resources .....	51
3.10 Social & Economic Factors .....	52
3.11 Oil and Gas Resources.....	55
3.12 Short-term Uses and Long-term Productivity.....	56
3.13 Irreversible and Irretrievable Commitments of Resources.....	56
3.14 Cumulative Effects .....	56
3.15 Other Required Disclosures.....	58
Chapter 4. Lists: Including List of Preparers and Document Recipients.....	60
4.1 Contributors.....	60
4.2 Distribution List.....	63
Literature Cited.....	66
Index .....	70
Appendices .....	72

## LIST OF FIGURES AND TABLES

Figure 1. Project Area Vicinity Map (green areas).....	2
Table S-1. Summary of management options and effects .....	iv
Table 1-1. National grasslands and forests in the project area with black-tailed prairie dog colonies .....	1
Table 2-1. Comparison of management tools for alternatives .....	19
Table 2-2. Effects summary for alternatives and several key issues on Buffalo Gap National Grassland .....	22
Table 2-3. Effects summary for alternatives and several major issues on Fort Pierre National Grassland.....	23
Table 2-4. Effects summary for alternatives and several major issues on Oglala National Grassland.....	24
Table 3-1. Black-tailed prairie dog colonies in the project area.....	28
Table 3-2. Effects of alternatives on black-tailed prairie dog colonies and their management .....	29
Table 3-3. Acreages of black-tailed prairie dog colonies in 4th order watersheds .....	32
Table 3-4. Approximate chronology for the project area .....	34
Table 3-5. Animal unit months (AUMs) of livestock grazing, 2001-2002.....	36
Table 3-6. Potential annual loss in livestock AUMs.....	38
Table 3-7. Species federally protected under ESA that may be affected and their known distribution.....	39
Table 3-8. Sensitive species and their known distribution in the project area .....	40
Table 3-9. Biological determinations <sup>1</sup> for federally listed threatened and endangered species.....	43
Table 3-10. Biological determinations <sup>1</sup> for sensitive species in the project area.....	44
Table 3-11. Management indicator species .....	46
Table 3-12. Active colony acres and estimated prairie dog population (in thousands) <sup>1</sup> .....	50
Table 3-13. Current and predicted colony complexes on Fort Pierre and Oglala National Grasslands.....	51



## ABBREVIATIONS AND ACRONYMS

APHIS	Animal and Plant Health Inspection Service
AUMs	Animal Unit Month(s)
B.A.	Bachelor of Arts
B.S.	Bachelor of Science
BA	Biological Assessment
BCR	Bird Conservation Regions
BE	Biological Evaluation
BFF	Black-footed Ferret
BGNG	Buffalo Gap National Grasslands
BGNG	Buffalo Gap National Grassland
BRD	Bessey Ranger District
BTPD	Black-tailed Prairie Dog
CAA	Clean Air Act
CBSG	Conservation Breeding Specialist Group
CD	Compact Disk
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CRP	Conservation Reserve Program
DDT	Dichloro-diphenyl-trichloroethane
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FPNG	Fort Pierre National Grassland
FPNG	Fort Pierre National Grassland
FRRD	Fall River Ranger District
FRWGA	Fall River West Geographic Area
FS	Forest Service
FSM	Forest Service Manual
FWS	U.S. Fish and Wildlife Service
G.A.	Geographic Area
GA	Geographic Area(s)
GIS	Geographic Information System
GPS	Global Positioning System
HUC	Hydrologic Unit Code
LRMP	Land and Resource Management Plan
M.S.	Master of Science
MA	Management Area
MIS	Management Indicator Species
N.G.	National Grassland
NEPA	National Environmental Policy Act
NF	National Forest
NFMA	National Forest Management Act
NFS	National Forest System

NG	National Grassland
NHPA	National Historic Preservation Act
NNF	Nebraska National Forest
NOA	Notice of Availability
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRDC	National Resources Defense Council
NRHP	National Register of Historic Places
ONG	Oglala National Grassland
ONG	Oglala National Grassland
PRRD	Pine Ridge Ranger District
R.D.	Ranger District
RD	Ranger District
ROD	Record of Decision
SCP	Species Conservation Project
SRMNF	Samuel R. McKelvie National Forest
T&E	Threatened & Endangered Species
U.S.C.	United States Code
USDA	United States Department of Agriculture
WO	Washington Office
WRD	Wall Ranger District



## DOCUMENT STRUCTURE

**How to Read this EIS Document.** The Forest Service has prepared this Draft Environmental Impact Statement (DEIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This DEIS discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed alternatives. The document is organized into four chapters. Chapters 1 and 2 are summaries while Chapter 3 contains detailed supporting information. Below is an explanation of each chapter and/or section.

**Summary.** This section provides a brief overview of the draft environmental impact statement.

**Chapter 1. Purpose and Need for Action:** This chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

**Chapter 2. Description and Comparison of the alternatives:** This chapter provides a more detailed description of the agency's proposed alternative methods for achieving the stated purpose. These alternatives were developed based on key issues raised by the public and other agencies. This section also provides a summary table of the environmental consequences associated with each alternative.

**Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the environmental effects of implementing the proposed alternatives. Resource areas, including soil, water, air, archeology, paleontology, rangeland, species at risk, recreation, and social and economical factors are listed here.

**Chapter 4. Lists: Including List of Preparers and Document Recipients:** This chapter provides a list of the preparers; agencies, elected officials, American Indian tribes, organizations, and individuals consulted during the development of the DEIS.

**Appendices:** The appendices provide more detailed information to support the analyses presented in the DEIS.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Nebraska National Forest Supervisor's Office.

## **SUMMARY**

This Draft Environmental Impact Statement (DEIS) focuses on three alternatives for managing prairie dogs on national grasslands along property boundaries to reduce unwanted colonization of adjoining private and tribal agricultural lands. Its primary purpose is to disclose the predicted environmental effects of implementing each alternative.

### **A Native Wildlife Species of High Public Interest**

Many people value the black-tailed prairie dog for the key role it plays in wildlife and biodiversity conservation, especially as it relates to the highly endangered black-footed ferret. To bring black-footed ferrets back from the brink of extinction will require large complexes of prairie dog colonies where ferrets can prey almost exclusively on prairie dogs and live in prairie dog burrows. The Conata Basin area of the Buffalo Gap National Grassland is not only one of those complexes; it is the premier and most successful ferret reintroduction site in North America. Concurrently, the prairie dog is viewed by many ranchers and farmers as an unwanted pest and a threat to agricultural production and rangeland health. Specifically, landowners express concerns over the effects of prairie dog foraging, clipping and burrowing on livestock forage, crop production, soil erosion and land values.

### **Being a Conservation Agency and Neighbor**

The Forest Service recognizes the importance of working closely with neighboring landowners to manage prairie dogs along property boundaries. The challenge is to find a balanced response to address the interests and concerns of landowners while conserving prairie dogs and other wildlife species commonly found in prairie dog colonies.

### **Prairie Dog Conservation and Management Planning**

General direction for prairie dog conservation on the national grasslands and forests in the project area has already been established in the Land and Resource Management Plan (LRMP). However, direction on how best to manage prairie dogs along property boundaries was deferred, pending release of statewide prairie dog plans. The State of South Dakota recently issued a statewide prairie dog plan, and the Forest Service has consulted this plan for additional guidance on reducing unwanted prairie dog colonization of adjoining private and tribal lands.

### **Alternatives**

Three alternatives for managing and reducing prairie dog populations in designated areas along national grassland boundaries to help reduce unwanted colonization of adjoining private and tribal agricultural lands were evaluated and considered. These designated areas, referred to as boundary management zones, are areas along national grassland boundaries where various management tools could be implemented to help reduce unwanted colonization of adjoining private and tribal lands.

The alternatives are:

- **Alternative 1.** This is the current LRMP direction for prairie dog conservation and management that relies primarily on non-lethal management tools, such as landownership adjustment, vegetation management, and live-trapping and relocation of prairie dogs.
- **Alternative 2.** The primary feature of this alternative is expanded use of rodenticide, along with non-lethal management tools, to reduce and manage prairie dog populations along national grassland boundaries. Under this alternative, rodenticide and limited shooting can be authorized in boundary management zones that are up to one mile wide along national grassland boundaries. All rodenticide use in these zones would be in response to complaints after on-site evaluations.
- **Alternative 3.** This alternative also features expanded use of rodenticide and some limited shooting, along with increased emphasis on non-lethal management tools. Boundary management zones under this alternative would be a maximum of 0.25 or 0.5 miles wide depending on location, and all rodenticide use in these zones would be in response to complaints after on-site evaluations. This alternative also encourages engagement of other agencies and organizations to work with willing landowners to find innovative solutions to management conflicts involving prairie dog colonies located along property boundaries.

Alternatives 2 and 3 would each require several amendments to the LRMP.

How effective will each alternative be in responding to the Forest Service's goal of conserving prairie dog colonies and associated wildlife on national grasslands and forests, while being responsive to the concerns of neighboring ranchers and farmers? Information in the attached table should help answer this question.



Table S-1. Summary of management options and effects

Issue	Indicator(s)	Alternative 1 (No Action)	Alternative 2	Alternative 3
Black-tailed Prairie Dog Management to Reduce Unwanted Colonization of Adjoining Agricultural Land (All Units Combined)	Width of Boundary Management Zones	No Boundary Management Zone	1 Mile	0.25 Mile (FPNG) 0.5 Mile(BGNG/ONG)
	Acreage of Active Colonies (Fall 2004) Currently in Boundary Management Zones and Subject to Possible Rodenticide Use	560	19,930	11,970
	Predicted Annual Rodenticide Use (initial and follow-up applications)	<300 acres	10,120 to 11,720 acres	7,330 to 9,420 acres
	Fencing Needed to Manage Vegetation in Boundary Management Zones	100 miles	30 miles	45 miles
Black-footed Ferret Recovery (Conata Basin Only)	Acreage of Active Colonies (Fall 2004) Currently Outside Boundary Management Zones (Rodenticide Unlikely)	20,310	15,140	19,290
	Predicted Acreage of Active Colonies By 2012	34,000 to 65,000	17,000 to 20,000	23,000 to 32,000
Other Wildlife and Biodiversity Conservation (All Units Combined)	Minimum Ferret Habitat Threshold Exceeded	Yes	Yes	Yes
	Acreage of Active Colonies (Fall 2004) Currently Outside Boundary Management Zone (Rodenticide Unlikely)	26,010	16,360	22,360
	Predicted Acreage of Active Colonies By 2012	53,000 to 102,000	18,000 to 22,000	30,000 to 41,000
	Species at Risk Biological Determinations	No Adverse Determinations	Adverse Effects Possible on FPNG and ONG	No Adverse Determinations
	Black-tailed Prairie Dog (Management Indicator Species) Objectives Met	Yes	Yes (BGNG) No (FPNG & ONG)	Yes
	Compatible With Other Management Indicator Species Objectives	Yes	Yes	Yes

FPNG = Fort Pierre National Grassland; BGNG = Buffalo Gap National Grassland; ONG = Oglala National Grassland

## CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

### 1.1 Introduction

This Draft Environmental Impact Statement (DEIS) addresses the conservation and management of black-tailed prairie dogs (*Cynomys ludovicianus*) on several National Forest System (NFS) units in Nebraska and South Dakota. For purposes of this DEIS, the term “conservation” is used in reference to activities for helping ensure long-term persistence of black-tailed prairie dogs across the project area. The term “management” is used primarily in context of reducing prairie dog populations and their habitat along property boundaries. Since prairie dog conservation direction is already established in the Land and Resource Management Plan (LRMP) for the national grasslands and forests in the project area, the primary focus of this DEIS is evaluating alternatives for managing and reducing prairie dogs along property boundaries in response to concerns of neighboring landowners.

The national grasslands and forests illustrated in Table 1-1 define the project area and are collectively managed as an administrative unit (Nebraska National Forest and Associated Units) of the Forest Service. For an overview of the environmental, social and economic characteristics of each NFS unit in the project area, consult the Final Environmental Impact Statement (FEIS) for the revised Land and Resource Management Plan (USDA Forest Service 2002 at [www.fs.fed.us/ngp](http://www.fs.fed.us/ngp)).

Current black-tailed prairie dog distribution in the project area is shown in Table 1-1 and Appendix A - Maps. There are no prairie dog colonies on the Samuel R. McKelvie National Forest and Pine Ridge Ranger District of the Nebraska National Forest.

**Table 1-1. National grasslands and forests in the project area with black-tailed prairie dog colonies**

National Grassland/Forest	NFS Land Area (Acres)	Current Active Colony Acreage <sup>1</sup> (Fall 2004)	Counties and State
Nebraska National Forest (Bessey Ranger District)	90,200	90	Blaine and Thomas Counties, Nebraska
Oglala National Grassland	94,200	2,220	Dawes and Sioux Counties, Nebraska
Buffalo Gap National Grassland	589,200	26,030 <sup>2</sup>	Custer, Fall River, Jackson and Pennington Counties, South Dakota
Fort Pierre National Grassland	116,100	1,340	Jones, Lyman and Stanley Counties, South Dakota
All Areas Combined	889,700	29,680	11 Counties in Nebraska and South Dakota

<sup>1</sup> Global positioning system (GPS) survey information

<sup>2</sup> Does not include approximately 6,780 acres that were treated with rodenticide in 2004

Conservation and management planning for black-tailed prairie dogs in the project area has essentially been an ongoing process since the 1960s, and the Forest Service has been challenged to strike the right balance of prairie dog conservation concurrent with prairie dog management. Through the late 1960s and early 1970s, Forest Service prairie dog plans called for colonies to be limited to approximately 3,000 acres through annual use of prairie dog rodenticide. Rodenticide use was halted for several years with the issuance of Presidential Executive Order 11643 in 1972 that banned use of chemical toxicants on federal lands that pose secondary poisoning risks to non-target species. In 1978, rodenticide use resumed when the Forest Service issued an environmental impact statement and prairie dog plan (USDA Forest Service 1978) that prescribed use of a newly developed rodenticide formulation (2 percent zinc phosphide on steam-rolled oats, EPA Label Registration No. 6704-74) along with vegetation management through livestock grazing adjustments in the project area. By then, prairie dog colonies had expanded to almost 30,000 acres. The new direction prescribed retention of approximately 5,200 acres (minimum) of active colonies. The remaining colony acreage was prescribed for potential rodenticide application to reduce prairie dog populations and to maintain forage for permitted livestock on the national grasslands. Rodenticide use was also prescribed to help reduce prairie dog conflicts along national grassland property boundaries with neighboring landowners. By the time this direction was fully implemented in 1981, the acreage of active prairie dog colonies combined with those recently treated with rodenticide totaled almost 44,000 acres.

The 1978 prairie dog direction was amended in 1981 (USDA Forest Service 1981) by further reducing the minimum acreage of active colonies to be retained (no rodenticide) to approximately 3,100 to address continued prairie dog encroachment along property boundaries. This direction remained in effect until 1989 when the direction was once again modified, primarily in response to the recent discovery and successful captive propagation of the endangered black-footed ferret in Wyoming. The Forest Service, with new information on black-footed ferrets and the possibility of future ferret reintroductions, developed a new plan in 1989 (USDA Forest Service 1989) to increase the colony retention acreage from 3,100 acres up to 8,000 acres, mostly located in the Conata Basin area of the Buffalo Gap National Grassland. Long-term survival of black-footed ferret populations depends on availability of large prairie dog colony complexes to survive (U.S. Fish and Wildlife Service 1988, CBSG 2004, Livieri and Perry 2005), and ferrets had historically been found in the large complex of prairie dog colonies in Conata Basin. Annual black-footed ferret releases in Conata Basin were initiated in 1994 under the 1989 prairie dog direction and a separate black-footed ferret reintroduction FEIS (U.S. Fish and Wildlife Service et al. 1994).

Other events set the stage for additional modifications to prairie dog conservation and management direction. In 1998, the black-tailed prairie dog was petitioned for listing and protection under the Endangered Species Act (ESA). In 2000, the U.S. Fish and Wildlife Service designated the black-tailed prairie dog as a candidate species for listing as a threatened species under ESA protection (U.S. Fish and Wildlife Service 2000). The Forest Service followed by issuing national guidance to limit use of prairie dog rodenticide to situations involving public health and safety risks and damage to facilities.



This direction was incorporated into the revised Land and Resource Management Plan (LRMP) and 2002 Record of Decision. The Chief of the Forest Service rescinded the national guidance in February, 2004, and encouraged all field units to use existing agency authorities, including direction and guidance in LRMPs, to further the conservation and management of black-tailed prairie dogs on national grasslands and forests. After further status reviews of the black-tailed prairie dog, the U.S. Fish and Wildlife Service dropped the candidate status of the species in August, 2004 (U.S. Fish and Wildlife Service 2004).

The extended drought in South Dakota and Nebraska over the past 4 years has led to expansion of prairie dog colonies, and increased complaints about unwanted colonization of lands adjoining national grasslands. In response to these complaints and a request by the Governor of South Dakota, application of prairie dog rodenticide in selected colonies was conducted by the State of South Dakota on private lands and by the USDA Animal and Plant Health Inspection Service – Wildlife Services (APHIS-WS) on the Buffalo Gap National Grassland in 2004. Prior to the initiation of rodenticide use, a lawsuit was filed by several conservation/environmental organizations. A stipulated settlement agreement was reached that allowed emergency rodenticide use. As part of the stipulated settlement agreement, no further use of rodenticide would occur until the completion of an environmental impact statement (EIS) and LRMP amendment addressing a long-term solution for management of prairie dog colonies.

## 1.2 Authorities

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**Forest Service.** The laws, policy, and direction applying to the use of rodenticides and management of prairie dogs by USDA Forest Service can be found in the LRMP FEIS (page 3-157).

**Animal and Plant Health Inspection Service – Wildlife Services.** The Secretary of Agriculture is authorized by Congress to protect American agricultural and other resources and interests from damage associated with wildlife. That authority includes, if requested, protection of threatened or endangered wildlife and to resolve conflicts between wildlife and human health and safety concerns pursuant to the Act of March 2, 1931, as amended, 7 U.S.C. 426-426b<sup>1</sup> and the Act of December 22, 1987, 7 U.S.C. 426c.

Formerly, section 426 specifically mentioned and included management of prairie dogs on National Forest System (NFS) lands, state lands, other areas of the public domain, and private lands.<sup>2</sup> The authorities imparted to the Secretary of Agriculture by the Act of March 2, 1931, as amended, and the Act of December 22, 1987, have been delegated to

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<sup>1</sup> Section 426 as amended on October 28, 2000, authorizes the Secretary of Agriculture to "... conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. The Secretary shall administer the program in a manner consistent with all of the wildlife services authorities in effect on the day before October 28, 2000."

<sup>2</sup> Section 426 was formerly worded as follows: "The Secretary of Agriculture is authorized to ... determine, demonstrate, and promulgate the best methods of eradication, suppression, or bringing under control on national forests and other areas of the public domain as well as on State, Territory, or privately owned lands of mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, ... and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, fur-bearing animals, and birds, and for the protection of stock and other domestic animals ...; and to conduct campaigns for the destruction or control of such animals."

APHIS, a USDA agency. Within APHIS, these authorities have been delegated to the Wildlife Services (WS) program. Accordingly, APHIS-WS's authorities support and authorize its mission of providing Federal leadership and expertise in managing problems caused by injurious and/or nuisance wildlife to agricultural and other natural resources, including other wildlife; minimizing potential wildlife harm or threats to human health and safety, e.g. zoonotic diseases from wildlife to humans and wildlife causing civilian or military airplane crashes.<sup>3</sup>

The APHIS-WS' "wildlife services" authorities cited above plus other statutory authorities<sup>4</sup> likewise authorize APHIS-WS to enter into cooperative agreements with Federal agencies, States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of injurious animal species and/or nuisance mammals and birds and those mammal and bird species that are reservoirs for zoonotic diseases. APHIS-WS activities and assistance are contingent upon cooperative funding from those cooperating and/or requesting APHIS-WS's services, including Federal, State, local, private or public associations or organizations, or individuals, and/or upon appropriations and/or specifically delineated authorization or direction from Congress.

### 1.3 Purpose and Need for Action

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The LRMP and 2002 ROD provide programmatic direction for conserving and managing black-tailed prairie dogs on the national grasslands and forests in the project area. This direction prescribes use of lethal and non-lethal tools to regulate and manage prairie dog populations. For example, rodenticide can be used on the national grasslands and forests to reduce or eliminate prairie dog populations posing health and safety risks or causing damage to facilities. This direction involves a small number of prairie dog colonies and results in minimal rodenticide use. The larger and more extensive issue is encroachment of prairie dog colonies from national grasslands onto adjoining private and tribal agricultural lands, where ranchers and farmers are concerned about losses in agricultural production, costs of managing prairie dogs, effects on land values, and risks to health and safety. The Forest Service decided in the LRMP to defer this larger issue until the States of Nebraska and South Dakota completed ongoing prairie dog management planning. The Forest Service also indicated that it would consult statewide prairie dog plans, once they were released and available, for further guidance on how best to respond to unwanted colonization of adjoining agricultural lands (Guideline H-2 in Chapter 1 of the LRMP). The ROD specifically stated:

"As part of being a good neighbor, we will implement management practices such as livestock grazing, land exchange, and prescribe fire that will likely contribute to the increase of prairie dog populations and to reduce conflicts with adjacent landowners. So as to not place a disproportionate share of prairie dogs on national

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<sup>3</sup> See [www.aphis.usda.gov/ws/mission.html](http://www.aphis.usda.gov/ws/mission.html). Examples of APHIS-WS activities include: training of wildlife damage management professionals; development and improvement of strategies to reduce losses and threats to humans from wildlife; collection, evaluation, and dissemination of management information; cooperative wildlife damage management programs; informing and educating the public on how to reduce wildlife damage; and providing data and a source for limited-use management materials and equipment, including pesticides.

<sup>4</sup> Section 713 of the Agriculture, and Related Agencies Appropriations Act of 2003.



forest system lands, I will work with the states of Nebraska and South Dakota in the preparation of the State-wide prairie dog conservation plan, pursuant to 36 CFR 219.7. I intend to implement the State-wide conservation plan to the extent allowable by law and policy in providing direction for the control of unwanted colonization of prairie dog onto private lands. Should the State-wide conservation plan conflict with provisions of this LRMP, I will propose an amendment to make the LRMP consistent with the State-wide conservation plan.”

A February 12, 2004, memo from the Washington Office rescinded the policy letter regarding use of prairie dog rodenticide on National Forest System lands because the restrictions on rodenticide had been incorporated in LRMPs for most prairie dog habitat on NFS lands. Further, the memo stated that many of the LRMPs also emphasize the importance of considering the various state prairie dog management plans. The memo directed that any future rodenticide use proposals are to be carefully reviewed and coordinated with any approved state prairie dog management plans.

On May 5, 2004, USDA Deputy Under Secretary, David Tenny, completed a discretionary review of appeal decisions for the LRMP and affirmed the Chief’s appeal decision with instructions regarding the management of prairie dog populations. As the Forest Service implemented the revised LRMP, the Nebraska National Forest was directed to ensure that local land managers work together with state and county officials and local landowners to aggressively implement the spirit and intent of the good neighbor policy. Specifically, the Nebraska National Forest was instructed to work with local interests and landowners to use the full suite of management tools available to reduce the potential for prairie dog colonies to expand onto adjacent non-federal lands. This aggressive application of the good neighbor policy should involve other governmental and local interests, as appropriate, and be done in conjunction with state prairie dog management plan.

In May 11, 2004 letter to the Chief, Regional Forester Rick Cables outlined the actions to be taken in regards to prairie dog management, specifically unwanted colonization onto adjacent non-federal lands. The Regional Forester’s letter stated:

“As part of being a good neighbor, aggressive management actions will be taken to achieve LRMP objectives and minimize conflicts with adjacent landowners. We will accelerate active management of unwanted colonization by applying appropriate tools. Prairie dog conservation plans developed by the states will be consulted for guidance on the appropriate response to unwanted colonization onto adjacent non-federal lands. As stated in the ROD, we intend to implement the state-wide prairie dog conservation strategies to the extent allowable when they become available. Any changes in direction for prairie dog control will be done with appropriate consultation and coordination.”

The South Dakota Black-tailed Prairie Dog Conservation and Management Plan ([www.sdgap.info/wildlife/hunting/prairiedogfinalplan.pdf](http://www.sdgap.info/wildlife/hunting/prairiedogfinalplan.pdf)) was released in December, 2004, with a revision in January, 2005. The Forest Service is in general agreement with the goals and intent of the South Dakota plan to manage for long-term, self-sustaining prairie dog populations while trying to reduce or avoid unwanted impacts to landowners.

With the new plan in hand, the Forest Service is now evaluating, as it indicated it would in the LRMP, the best way to address encroachment of prairie dogs from national grasslands onto adjoining private and tribal agricultural lands. Other prairie dog conservation and management direction prescribed in the LRMP is already being implemented.

The State of Nebraska has not issued a statewide prairie dog plan. However, the alternatives being evaluated in this DEIS address prairie dog conservation and management on the Forest Service administered lands in both Nebraska and South Dakota. This will assure that the LRMP provides balanced and integrated guidance across the administrative unit. Although the State of Nebraska does not currently have a prairie dog plan, the Forest Service will continue to closely coordinate prairie dog management with Nebraska, as well as South Dakota.

## **1.4 Proposed Actions**

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The Forest Service proposes the following actions to meet the purpose and need described in Section 1.3 above:

- 1) Continue implementing prairie dog conservation direction in the LRMP,
- 2) Develop a project-level and site-specific implementation plan to reduce unwanted colonization of adjoining agricultural lands along national grassland boundaries,
- 3) Amend the LRMP as needed to support the site-specific implementation plan and to modify the boundary of the Conata Basin black-footed ferret reintroduction area. The ferret area amendment is proposed because it has been determined that a block of 5,130 acres of land is unsuitable for black-footed ferrets and is isolated from the core ferret habitat in Conata Basin.

Alternatives for implementing the proposed actions address a suite of management tools, non-lethal and lethal, including rodenticide and limited shooting in selected colonies to reduce unwanted colonization on adjoining agricultural lands. Rodenticide (2 percent zinc phosphide grain bait) when applied to label specifications is highly effective in eliminating or reducing selected prairie dog populations (Tietjen 1976, Uresk et al. 1986) while shooting is typically less effective but could be a management tool for limiting or regulating prairie dog populations (Vosburgh and Irby 1998). Prairie dog shooting is regulated primarily by state wildlife agencies. However, in 1998 the Forest Service issued a shooting closure in the Conata Basin black-footed ferret habitat. This closure remains in effect.

Non-lethal management tools considered include landownership adjustment and third party solutions. Third party solutions involve other government agencies or private organizations that provide innovative solutions to site-specific prairie dog management issues. These solutions include but are not limited to financial incentives, conservation agreements and conservation easements with willing landowners to help conserve prairie



dogs on their lands and national grasslands. Other non-lethal tools that may be effective and used in a limited number of situations are live-trapping and prairie dog barriers, both visual and physical. Visual barriers could consist of vegetation zones where livestock grazing is significantly reduced or excluded to increase the height and density of grassland vegetation. This reduces visibility and the ability of prairie dogs to detect predators, thus discouraging prairie dog dispersal and colony expansion into the heavier vegetation (Knowles 1986, Uresk 1987, Fagerstone and Ramey 1996). However, the effectiveness of vegetation barriers is substantially reduced during droughts. Visual barriers could also be constructed using solid fabric fences that prairie dogs will, at least temporarily, avoid because of reduced visibility and ability to detect predators (Franklin and Garrett 1989). Physical barriers are typically multi-strand fences, including electric fence, which prairie dogs will approach but cannot physically penetrate.

The Forest Service will also carefully evaluate any future proposals for additional pipelines or other livestock water developments near property boundaries. These activities result in soil disturbances and livestock concentrations that attract prairie dogs and typically accelerate the establishment and expansion of prairie dog colonies (Knowles 1986, Licht and Sanchez 1993).

The scope of this proposal is limited to those actions described above. Other issues related to black-tailed prairie dog or black-footed ferret conservation and management in the project area are outside the scope of this proposed action.

Detailed descriptions of the alternatives for implementing the proposed actions are presented in Chapter 2 of this document.

## 1.5 Decision Framework

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This DEIS is not a decision document. Its purpose is to document analyses and disclose direct, indirect, and cumulative effects to the environment from implementing the proposed action and other alternative actions. After allowing the public an opportunity to comment on the alternatives, the Forest Service will reassess the proposed action, other alternatives, and the environmental consequences in order to make the following decisions:

- 1) Determine whether a site-specific implementation plan is needed for reducing prairie dog encroachment from national grasslands and unwanted colonization of adjoining agricultural lands,
- 2) If a site-specific implementation plan is needed, determine when, where, and how management tools would be applied,
- 3) Determine whether amendment(s) to the LRMP are needed for effective prairie dog management.

These decisions will address both programmatic and site-specific project level planning. The primary purpose of the implementation plan, identified in items 1 and 2 above, is to provide site-specific environmental analysis and public disclosure for most future projects involving rodenticide use, regulated prairie dog shooting, and some of the non-

lethal management tools. Item 3 includes amendments to some of the programmatic direction in the LRMP that relate to black-tailed prairie dogs.

## 1.6 Public Involvement

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A Notice of Intent (NOI) to prepare this DEIS was published in the Federal Register on November 1, 2004. On November 5, 2004, letters were sent to interested parties informing them of the NOI and the 30-day comment period (see Chapter 4, 4.2, Distribution List). Since then, Forest Service officials have met or contacted various individuals, groups, tribes, state agencies, local agencies, and other federal agencies with an interest in prairie dog conservation and management on NFS lands. This includes officials from USDA Animal and Plant Health Inspection Service and the State of South Dakota, both cooperating agencies as indicated in the Federal Register in a December 10, 2004, correction to the earlier Notice of Intent. The State of Nebraska elected not to formally participate as a “cooperating agency” but still has the opportunity to fully participate and provide recommendations and comments.

The Forest Service has a long history and considerable experience in prairie dog conservation and management on national grasslands and forests in South Dakota and Nebraska. This includes working with many interested individuals, conservation and industry organizations, landowner associations, tribes and government agencies. As a result, the issues associated with this proposed action are well understood and documented. In addition, the recent revision of the LRMP provided another opportunity for public involvement and for the agency to listen, document and consider public, tribal and agency comments relating to prairie dog conservation and management. Forest Service officials, including members of the DEIS interdisciplinary team, have considered this information in the development and evaluation of the proposed actions and alternatives.

The States of South Dakota and Nebraska recently completed public involvement programs addressing prairie dog conservation and management across each state. Comments from both efforts have been analyzed and documented, and Forest Service officials have also reviewed this information to better understand the issues, from a statewide perspective. The Nebraska and South Dakota public involvement information is available for review at the Forest Supervisor’s Office in Chadron, Nebraska.

## 1.7 Issues

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Key issues identified through public and agency comment that are associated with the proposed actions include:

- Unwanted prairie dog colonization on adjoining private and tribal lands and effects on landowners and their property,
- Importance of prairie dogs and these public lands, especially the Conata Basin Black-footed Ferret Reintroduction Area, to the recovery of the endangered black-footed ferret and to the partners in the recovery program,



- Prairie dog colonies as habitat for grassland wildlife and biodiversity conservation,
- Humane treatment of prairie dogs and associated wildlife,
- Costs and effectiveness of prairie dog management on public and private lands,
- Soil, water, livestock forage and prairie dog relationships,
- Environmental and public health and safety risks,
- Local economic stability.

Some of these issues do not need further evaluation because there are already regulatory and policy requirements that address them. For example, environmental and public health and safety issues associated with rodenticide use can be remedied by ensuring that pesticide label instructions and Forest Service manual policy and procedures for pesticide use (FSM 2150) are followed during storage, transportation and application of rodenticide. Humane treatment issues can be addressed by meeting provisions of the Animal Welfare Act when prairie dogs are live-trapped. Other issues that were: 1) outside the scope of the proposed action or not relevant to the decision to be made; 2) already addressed and evaluated in the LRMP; or 3) conjectural and not supported by scientific or factual evidence are not addressed in this DEIS.

The following indicators will be used to help address most of the key issues identified above:

- Acreage and distribution of active prairie dog colonies,
- Acres of rodenticide use,
- Biological determinations for black-footed ferrets and other species at risk,
- Attainment of population trend and habitat objectives for black-tailed prairie dogs and other management indicator species,
- Changes in livestock forage availability in boundary management zones,
- Watershed effects,
- Implementation costs.

There were numerous comments that focused on the issue of financial incentives for adjoining landowners. The Forest Service may be able to identify or facilitate partnerships between willing landowners and other third parties where financial incentives or other innovative solutions can be explored. However, it is impossible at this time to reasonably predict the interest or evaluate the potential effectiveness of third party solutions at this time.

## 1.8 Other Related Efforts

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Landownership adjustments to better consolidate national grassland parcels are very effective long-term solutions to prairie dog boundary conflicts at some locations. These

types of actions are ongoing and require separate environmental analyses and public disclosure processes.

Periodic annual rest or light livestock grazing intensities could be used in selected locations as vegetation management tools to help regulate and manage prairie dog populations. These management tools increase the height and density of grassland vegetation around colonies and decrease the amount of soil disturbance, resulting in conditions less suitable for prairie dogs. Long-term modifications to livestock grazing strategies are generally accomplished through an ongoing allotment management planning process that requires separate environmental analyses and public disclosure. Annual adjustments in livestock grazing in response to drought conditions and concern over increased prairie dog movement usually do not require additional environmental analyses and public disclosure.

Recent drought conditions in Nebraska and South Dakota have greatly accelerated prairie dog colony expansion and establishment. This has resulted in increased complaints from many neighboring landowners about prairie dog colonies encroaching onto their lands from national grasslands. In response to these complaints and the severe drought conditions in 2004, prairie dog rodenticide was recently applied to approximately 6,800 acres of colonies along property boundaries on the Buffalo Gap National Grassland. This was implemented through a cooperative program with State of South Dakota and USDA Animal and Plant Health Inspection Service.

The national black-footed ferret recovery program involves a large number of partners that have and continue to contribute substantial financial, operational and professional support to the successful captive breeding and Conata Basin ferret reintroduction programs. The return on these private and public investments in the form of black-footed ferret recovery and the continued success of the Conata Basin reintroduction program are largely dependent on retaining prairie dog populations at levels needed to support long-term ferret populations.

## CHAPTER 2. DESCRIPTIONS AND COMPARISON OF THE ALTERNATIVES

### 2.1 Introduction ---

This chapter describes and compares three alternatives, a no action and two action alternatives for the proposed actions relating to black-tailed prairie dog conservation and management. The two action alternatives require LRMP amendments. The focus of the alternatives is prairie dog management along boundaries to reduce unwanted prairie dog colonization of adjoining agricultural lands. This chapter includes a summary comparison that defines differences between alternatives, providing a clear basis for determining alternative preference by the decision maker and public.

### 2.2 Alternatives Considered in Detail ---

Three alternatives were developed in response to issues raised by the public and other government agencies.

#### 2.2.1 Alternative 1 - No Action (Current LRMP Direction)

**Summary Description:** Prairie Dog Conservation Concurrent With Population Regulation and Management Through Non-Lethal Methods and Limited Rodenticide Use

**Conservation.** Current LRMP direction for prairie dog conservation is unchanged and implemented as funding, staffing and priorities allow. Conservation activities underway include but are not limited to:

- Expansion of the prairie dog colony complex in the Conata Basin black-footed ferret reintroduction area (Management Area 3.63),
- Prairie dog shooting closure in Conata Basin black-footed ferret reintroduction habitat,
- Identification and implementation of opportunities for landownership adjustment to facilitate prairie dog population expansion while reducing boundary management conflicts,
- Expansion of the prairie dog colony complex (Management Area 3.63) near Smithwick, South Dakota, as potential habitat for future black-footed ferret reintroductions,
- Establishment and maintenance of prairie dog colony complexes (conservation focus areas) on the Fort Pierre and Oglala National Grasslands,
- Live-trapping and relocation of prairie dogs for black-footed ferret recovery program and for accelerating prairie dog colony expansion in selected areas.



In addition to the above conservation activities, prairie dog shooting closures identified in the LRMP for ferret reintroduction habitat would be implemented in the Smithwick ferret habitat area (Management Area 3.63) in 2005.

The colony complexes mentioned above, one each on the Fort Pierre and Oglala National Grasslands, need to meet design criteria specified in the LRMP to help ensure long-term persistence of prairie dog populations on those areas. The complex criteria are a minimum of 1,000 acres in at least 10 colonies located no greater than 6 miles apart (inter-colony distance). These criteria closely follow recommendations presented in the Multi-State Conservation Plan for the Black-tailed Prairie Dog (Luce 1999 and 2003).

**Boundary Management.** LRMP direction to manage prairie dog populations using non-lethal management tools is implemented as funding, staffing and priorities allow. Non-lethal methods such as vegetation management through livestock grazing modifications are tools of choice and implemented in selected sites to help regulate and manage prairie dog populations. Non-lethal methods are used along property boundaries to reduce colony establishment and expansion rates in these areas. For example, this may include the use of temporary fencing to help manage livestock grazing, including livestock removal, to create visual (vegetation) barriers along property boundaries. If suitable destination sites are available, live-trapping may be used in selected colonies along boundaries to remove and relocate prairie dogs. Identification and evaluation of opportunities for landownership adjustment to reduce prairie dog management conflicts with adjoining landowners continues as prescribed in the LRMP.

Limited use of rodenticide is prescribed and implemented for public health and safety risks and damage to facilities, such as rural residences. Although it has never been confirmed in the project area, a plague epizootic near a rural residence would certainly be considered a health and safety risk. The abundance of rattlesnakes in prairie dog colonies is currently a health and safety consideration when colonies expand into and around farm and ranch headquarters and rural residences. Recreational prairie dog shooting near farm and ranch headquarters is also a safety issue. All decisions regarding rodenticide use, including the amount and extent of rodenticide use, on the national grasslands in response to public health and safety risks would be made by the Forest Service after on-site evaluations.

A project-level implementation plan for prairie dog management under this alternative is presented in Appendix B. The plan describes the specific conditions when lethal and non-lethal management tools could be applied on the ground without additional public disclosure or environmental analysis.

**LRMP Amendments.** There are no LRMP amendments needed under this alternative. As directed in the LRMP (H-2 Guideline in Chapter 1 of the LRMP), state prairie dog plans are to be consulted for additional guidance on how to respond to unwanted colonization of adjoining agricultural lands. The recently released South Dakota Prairie Dog Conservation and Management Plan calls for rodenticide use along national grassland boundaries to reduce unwanted colonization of adjoining lands. However, under this alternative, the Forest Service does not authorize additional rodenticide use

and instead continues to focus on non-lethal methods of prairie dog population regulation with lethal methods only used primarily in response to public health and safety risks.

## 2.2.2 Alternative 2

**Summary Description:** Prairie Dog Conservation Concurrent With Population Regulation and Management Through Non-Lethal Methods and Expanded Rodenticide Use Along Property Boundaries (1.0 Mile Boundary Management Zone).

**Conservation.** Some of the LRMP direction for prairie dog conservation continues to be implemented as funding, staffing and priorities allow. This direction includes but is not limited to:

- Maintain the prairie dog colony complex in the Conata Basin black-footed ferret reintroduction area (Management Area 3.63),
- Modified prairie dog shooting closure in Conata Basin black-footed ferret reintroduction habitat,
- Identification and implementation of opportunities for landownership adjustment to facilitate prairie dog population expansion.

The LRMP also prescribes development of black-footed ferret reintroduction habitat on the Buffalo Gap National Grassland near Smithwick, South Dakota. However, successful establishment of a prairie dog colony complex under this alternative that is large enough to support a ferret reintroduction in this area would likely require conservation agreements for additional active colony acreage on adjoining lands.

**Boundary Management.** LRMP direction to manage prairie dog populations using non-lethal management tools is implemented as funding, staffing and priorities allow. Rodenticide is added under this alternative as a primary tool for use on prairie dog colonies that encroach onto adjoining agricultural lands. Encroachment occurs when a prairie dog colony on national grasslands expands to a point where unwanted colonization of adjoining land occurs. Rodenticide use could extend a maximum of one mile into national grasslands from private and tribal property boundaries. This does not apply to boundaries along state school lands, Badlands National Park and other federal lands. All rodenticide use on the national grasslands would be in response to complaints from adjoining landowners that can demonstrate colonization on their lands along property boundaries and a national grassland colony is a significant contributor to the colonization. On the Buffalo Gap and Fort Pierre National Grasslands, the complaint process is initiated through the State of South Dakota. The appropriate response to each complaint involving a national grassland colony would be determined by the Forest Service after on-site evaluations and coordination with landowners and South Dakota Departments of Agriculture and Game, Fish and Parks. In Nebraska, on-site evaluations would likely be conducted with landowners and officials from the Game and Parks Commission and USDA Animal and Plant Health Inspection Service.

Decisions not to use rodenticide may occur in situations involving private inholdings or small isolated tracts, especially in black-footed ferret reintroduction habitat and



designated prairie dog colony complexes. Like Alternative 1, rodenticide is also used in response to public health and safety risks and damage to facilities. This could occur along property boundaries or within interior areas of national grasslands.

Additional criteria apply on some areas before rodenticide use would be authorized. Rodenticide use in the Conata Basin black-footed ferret reintroduction area could only extend to a mile if minimum black-footed ferret population thresholds continue to be met. These thresholds, based on current information, indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population (Livieri and Perry 2005). If the minimum thresholds are not being met, rodenticide use would not occur or would be limited to less than a mile from adjoining lands. Rodenticide use on Oglala and Fort Pierre National Grasslands could only extend the specified distances if reasonable progress can be demonstrated in establishing the prairie dog colony complexes prescribed in the LRMP for both areas. Reasonable progress is achieved when long-term trends in active prairie dog colony acreage remain upward, when compared to the 1996–98 colony acreages used in the LRMP FEIS analyses.

Regulated shooting in the Conata Basin black-footed ferret habitat may be authorized in the boundary management zone if minimum ferret population thresholds continue to be met and the authorized level of incidental take, as specified in a Biological Opinion by the U.S. Fish and Wildlife Service for the Conata Basin black-footed ferret reintroduction is not likely to be exceeded. This would require a modification to the current shooting closure. The intent is to help reduce prairie dog populations along boundaries to reduce unwanted colonization of adjoining lands. Regulated shooting involves limiting the number of shooters and specifying season and shooting hours in selected colonies. It also includes the necessary enforcement and oversight. The shooting closure is retained for the interior portions of Conata Basin ferret habitat. Recreational prairie dog shooting outside occupied black-footed ferret reintroduction habitat continues under State regulatory authorities and helps reduce prairie dog populations in both interior and boundary colonies on national grasslands.

The shooting closure prescribed in the LRMP for black-footed ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, a shooting closure would not be implemented in this area until ferret reintroduction is proposed or scheduled. Forest Service defers decisions on prairie dog shooting restrictions on national grasslands outside active black-footed ferret reintroduction habitat to the states.

Non-lethal methods would be used concurrently, where appropriate, with rodenticide along property boundaries to augment long-term effectiveness of the rodenticide. For example, this may include the use of temporary fencing to help manage livestock grazing, including livestock removal, in rodenticide zones to create visual (vegetation) barriers. If more long-term adjustments are needed in livestock grazing management to facilitate the effectiveness of prairie dog management, additional environmental analyses and public disclosure would be conducted as appropriate. Use of visual and physical prairie dog barriers may also be used in selected areas.



Non-lethal tools under this alternative also include landownership adjustment, financial incentives and conservation easements. Rapid assessments to evaluate opportunities for landownership adjustment in problematic complaint areas would be scheduled and completed as complaint areas are identified, with efforts being focused in black-footed ferret habitat and the designated prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands. Progress with these efforts would be reported in the annual LRMP Monitoring and Evaluation Report. Financial incentives and conservation easements would involve government agencies and private organizations working with willing landowners to find ways of conserving prairie dogs on their lands and national grasslands.

Prairie dog rodenticide along property boundaries is not proposed under this alternative on the Nebraska National Forest, Bessey Ranger District. Only non-lethal tools would be considered to address adjoining landowner complaints about encroachment on that area. The same applies to the Nebraska National Forest, Pine Ridge Ranger District, and Samuel R. McKelvie National Forest. Both of these areas currently do not support prairie dog colonies, but if colonies establish in the future along property boundaries, only non-lethal methods would be considered to help address adjoining landowner complaints.

A project-level implementation plan for prairie dog management under this alternative is presented in Appendix B. The plan describes the specific conditions when lethal and non-lethal management tools could be applied on the ground without additional public disclosure or environmental analysis.

**LRMP Amendments.** LRMP amendments needed to support implementation of this alternative are presented in Appendix C. The main amendment would respond to H-2 Guideline in Chapter 1 of the LRMP that requires state prairie dog plans to be consulted for additional guidance on responding to unwanted prairie dog colonization on adjoining agricultural lands. The LRMP would also be amended by deleting the objective and guidelines (Chapter 2, LRMP) that prescribe establishment of a new colony complex on the Oglala National Grassland and northeast portion of the Fort Pierre National Grassland. Black-tailed prairie dogs would also be dropped as a management indicator species for both national grasslands. A total of two objectives, two standards, and one guideline would be deleted and not replaced under this alternative. A total of six standards and one guideline would be amended under this alternative.

The LRMP would also be amended to modify the boundary of the Conata Basin black-footed ferret reintroduction area. This amendment is needed to remove 5,130 acres of land that is isolated from the core ferret habitat in Conata Basin and has been determined to be unsuitable for black-footed ferrets (Livieri and Perry 2005).

### **2.2.3 Alternative 3**

**Summary Description:** Prairie Dog Conservation Concurrent With Population Regulation and Management Through Non-Lethal Methods and Expanded Rodenticide Use Along Property Boundaries (0.25 and 0.5 Mile Boundary Management Zones)

**Conservation.** Most LRMP direction for prairie dog conservation is implemented as funding, staffing and priorities allow. Modifications are made to some conservation measures prescribed in the LRMP including the shooting and rodenticide prohibitions in black-footed ferret reintroduction habitat (Management Areas 3.63).

Priority conservation activities implemented under this alternative include:

- Expansion of the prairie dog colony complex in the Conata Basin black-footed ferret reintroduction habitat (Management Area 3.63),
- Identification and implementation of opportunities for landownership adjustment to facilitate prairie dog population expansion,
- Modified prairie dog shooting closure in Conata Basin black-footed ferret reintroduction habitat,
- Establishment and intensive management of prairie dog colony complexes on Fort Pierre and Oglala National Grasslands,
- Third party solutions with willing landowners.

As described under Alternative 2, the LRMP also prescribes development of black-footed ferret reintroduction habitat on the Buffalo Gap National Grassland near Smithwick, South Dakota. Under this alternative, successful establishment of a prairie dog colony complex that is large enough to support a ferret reintroduction in this area may take more than 10 years or may require conservation agreements for additional active colony acreage on adjoining lands.

The colony complexes mentioned above, one each on the Fort Pierre and Oglala National Grasslands, need to meet design criteria specified in the LRMP to help ensure long-term persistence of prairie dog populations on those areas. The complex criteria are a minimum of 1,000 acres in at least 10 colonies located no greater than 6 miles apart (inter-colony distance). These criteria closely follow recommendations presented in the Multi-State Conservation Plan for the Black-tailed Prairie Dog (Luce 1999 and 2003).

**Boundary Management.** LRMP direction to manage prairie dog populations using non-lethal management tools is implemented as funding, staffing and priorities allow. Rodenticide is added under this alternative as a primary tool for use on prairie dog colonies that encroach onto adjoining agricultural lands. Encroachment is defined as a national grassland colony that extends across a private or tribal property boundary or would likely cross a property boundary within 1 to 2 years. By stopping colonies just before they encroach on an adjoining landowner, the number of chronic problem areas likely to develop and the amount of rodenticide and other management actions requested and needed in the future should be substantially reduced. Rodenticide use would be to prevent imminent encroachment as described above or in response to complaints from adjoining landowners that can demonstrate colonization on their lands along property boundaries and that a national grassland colony is a significant contributor to the colonization. On the Buffalo Gap and Fort Pierre National Grasslands, the complaint process is initiated through the State of South Dakota. The appropriate response to each complaint involving a national grassland colony would be determined by the Forest



Service after on-site evaluations and coordination with landowners and the South Dakota Departments of Agriculture and Game, Fish and Parks. In Nebraska, on-site evaluations would likely be conducted with landowners and officials from the Game and Parks Commission and USDA Animal and Plant Health Inspection Service.

Decisions not to use rodenticide may occur in situations involving private inholdings or small isolated tracts, especially in black-footed ferret reintroduction habitat and designated prairie dog colony complexes. Like Alternatives 1 and 2, rodenticide is also used in response to public health and safety risks and damage to facilities. This could occur along property boundaries or within interior areas of national grasslands and forests.

Landownership and prairie dog distribution patterns are substantially different between the Fort Pierre National Grassland and the Buffalo Gap and Oglala National Grasslands, so guidance on rodenticide use is not consistent across the national grasslands. This is necessary to balance the need for prairie dog conservation with concerns of adjoining landowners. Boundary management zones on the Buffalo Gap and Oglala National Grasslands where rodenticide and other management tools could be used to reduce unwanted colonization of adjoining lands extend a maximum of 0.5 miles from private and tribal property boundaries into the national grasslands. The boundary management zone on the Fort Pierre National Grassland is set at a lesser width of 0.25 miles (maximum) to avoid elimination of most colonies. Boundary management zones are set up only along private and tribal lands and not along state school lands, Badlands National Park or other federal lands.

Unique circumstances and reoccurring problems may warrant exceeding the specified distances up to a maximum of one mile, but exceptions would only be made if additional environmental analyses and public disclosure occur. Rodenticide use in the Conata Basin black-footed ferret reintroduction area could only extend to a mile if minimum black-footed ferret population thresholds continue to be met. These thresholds, based on current information, indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population. If the minimum thresholds are not being met, rodenticide use would not occur or would be limited to less than a mile from adjoining lands. Rodenticide use on Oglala and Fort Pierre National Grasslands could only extend beyond the specified distances if reasonable progress can be demonstrated in establishing the prairie dog colony complexes prescribed in the LRMP for both areas. Reasonable progress is achieved when long-term trends in active prairie dog colony acreage remain upward, when compared to the 1996–98 colony acreages used in the LRMP FEIS analyses.

Regulated shooting in the Conata Basin black-footed ferret habitat may be authorized in the boundary management zone if minimum ferret population thresholds continue to be met and the authorized level of incidental take, as specified in a Biological Opinion by the U.S. Fish and Wildlife Service for the Conata Basin black-footed ferret reintroduction, is not likely to be exceeded. This would require a modification to the current shooting closure. The intent is to help regulate prairie dog populations along boundaries to reduce unwanted impacts on adjoining lands. Regulated shooting involves



limiting number of shooters and specifying season and shooting hours in selected colonies. It also includes the necessary enforcement and oversight. The shooting closure is retained for the interior portions of Conata Basin ferret habitat. Recreational prairie dog shooting outside occupied black-footed ferret reintroduction habitat continues under State regulatory authorities and helps regulate prairie dog populations in both interior and boundary colonies on national grasslands.

The shooting closure prescribed in the LRMP for black-footed ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, a shooting closure would not be implemented in this area until ferret reintroduction is proposed or scheduled. Forest Service defers decisions on prairie dog shooting restrictions on national grasslands outside active black-footed ferret reintroduction habitat to the states.

Non-lethal methods would be used concurrently, where appropriate, with rodenticide along property boundaries to augment long-term effectiveness of rodenticides. For example, this may include the use of temporary fencing to help manage livestock grazing, including livestock removal, in boundary management zones to create visual (vegetation) barriers. If more long-term adjustments are needed in livestock grazing management to facilitate the effectiveness of prairie dog management, additional environmental analyses and public disclosure may be conducted as appropriate. Use of visual and physical prairie dog barriers may also be used in selected areas.

Non-lethal management tools also include landownership adjustment and third party solutions. Rapid assessments to evaluate opportunities for landownership adjustment in complaint areas would be prioritized and completed as complaint areas are identified, with land ownership adjustments in black-footed ferret habitat and the designated prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands being highest priorities. Progress in landownership adjustment and other third party solutions would be reported in the annual LRMP Monitoring and Evaluation Report. Third party solutions involve other government agencies or private organizations that provide innovative solutions to help conserve prairie dogs on their lands and national grasslands. These solutions include but are not limited to financial incentives, conservation agreements and easements with willing landowners, and other tools identified in the national black-tailed prairie dog conservation assessment and strategy (Van Pelt 1999).

Prairie dog rodenticide along property boundaries is not used under this alternative on the Nebraska National Forest, Bessey Ranger District. Only non-lethal tools would be considered to address adjoining landowner complaints about encroachment. The same applies to the Nebraska National Forest, Pine Ridge Ranger District, and Samuel R. McKelvie National Forest. Both of these areas currently do not support prairie dog colonies, but if colonies establish in the future along property boundaries, only non-lethal methods would be considered to help address adjoining landowner complaints.

A project-level implementation plan for prairie dog management under this alternative is presented in Appendix B. This plan provides more detailed management direction, including an adaptive management approach for use of a full suite of management tools.

**LRMP Amendments.** LRMP amendments needed to support implementation of this alternative are presented in Appendix C. The main amendment is simply a response to H-2 Guideline in Chapter 1 of the LRMP that requires state prairie dog plans to be consulted for additional guidance on responding to unwanted prairie dog colonization on adjoining agricultural lands. A total of two standards and one guideline would be deleted and not replaced under this alternative. A total of six standards and one guideline would be amended.

The LRMP would also be amended to modify the boundary of the Conata Basin black-footed ferret reintroduction area. This amendment is needed to remove 5,130 acres of land that is isolated from the core ferret habitat in Conata Basin and has been determined to be unsuitable for black-footed ferrets (Livieri and Perry 2005).

## 2.2.4 Comparison of Boundary Management Tools

Table 2-1 provides a concise summary of prairie dog management tools included under each alternative. With the exception of the modification to the Forest Service shooting closure in Conata Basin, all management tools apply equally to the national grasslands in the project area. The last five tools in the table could be applied to potential complaint areas in the future along the property boundaries of the Samuel R. McKelvie National Forest and Nebraska National Forest, Pine Ridge Ranger District, should prairie dog colonies eventually establish in these areas. They could also be applied to potential future complaints involving prairie dog colonies on the Bessey Ranger District of the Nebraska National Forest.

**Table 2-1. Comparison of management tools for alternatives**

Management Tool	Alternative 1	Alternative 2	Alternative 3
Rodenticide Use to Reduce Public Health and Safety Risks and Damage to Facilities	Yes	Yes	Yes
Rodenticide Use to Reduce Unwanted Colonization on Adjoining Agricultural Lands	No	Yes (1 mile zone)	Yes (0.25 and 0.5 mile zones) <sup>1</sup>
Shooting Closure Modification in Conata Basin	No	Yes	Yes
Landownership Adjustment	Yes	Yes	Yes
Third Party Solutions <sup>2</sup>	Yes	Yes	Emphasized
Vegetation Management Barriers	Yes	Yes	Yes
Other Visual and Physical Barriers	Yes	Yes	Yes
Live-trapping <sup>3</sup>	Designated Areas	Yes	Yes

<sup>1</sup> 0.25 mile wide boundary management zone on Fort Pierre National Grassland and 0.5 mile elsewhere

<sup>2</sup> Third party solutions could involve financial incentives, conservation agreements, conservation easements and other innovative solutions. Only Alternative 3 addresses the opportunity for other additional innovative solutions through third party partnerships.

<sup>3</sup> Limited to black-footed ferret habitat and designated prairie dog colony complexes under Alternative 1 but not restricted to those areas under Alternatives 2 and 3.

The width of the boundary management zones in Alternatives 2 and 3 are based on the assumption that, all other variables being constant, the effectiveness of a zone in reducing unwanted colonization of adjoining agricultural lands increases as the width of the zone increases. This seems to be a reasonably safe assumption. However, it is acknowledged that there is no research information on the comparative effectiveness of zones of a mile or less in reducing unwanted colonization of adjoining lands. Tables 2-2, 2-3, and 2-4 include a summary of conservation activities that would be implemented under each alternative.

## **2.2.5 Conservation Measures Common to All Alternatives**

These measures would be followed:

- 1) Avoid all significant fossil and heritage resource sites when conducting any ground-disturbing projects. Before ground disturbing activities, a Forest Service paleontologist and archeologist would be contacted to review the proposed project to determine if any fossil or heritage resource surveys, reports, or actions are needed.
- 2) Prior to ground disturbing activities, a journey-level Forest Service biologist/botanist would be contacted to review the proposed project to determine if any biological surveys, reports, or actions are needed.
- 3) If the predicted range of prairie dog colony acreage listed in Table 3-2 of this document for any national grassland is exceeded, prairie dog management would be revisited. This would likely involve additional public involvement and environmental analysis.

Regarding measures 1 and 2 above, new ground disturbances resulting from use of lethal and non-lethal management tools are expected to be minimal.

## **2.3 Alternatives Considered but Eliminated from Detailed Study**

An alternative using only non-lethal prairie dog management methods was suggested. Alternative 1 in this DEIS is essentially non-lethal, except for very limited rodenticide use for public health and safety issues and damage to facilities. Therefore, another non-lethal alternative was not considered.

## **2.4 Comparison of Effects**

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Tables 2-2, 2-3, 2-4, and 2-5 provide a concise summary of the effects of implementing each alternative on some of the key issues identified in Section 1.7 of this document. Summary tables are not provided for Nebraska National Forest, Bessey Ranger District, because no additional prairie dog conservation or management activities beyond those already existing in the revised LRMP occur under any of the alternatives. Summary



tables are also not presented for the Nebraska National Forest, Pine Ridge Ranger District, or Samuel R. McKelvie National Forest because prairie dog colonies do not occur on those areas.

**Table 2-2. Effects summary for alternatives and several key issues on Buffalo Gap National Grassland**

Issue	Indicator(s)	Alternative 1 (No Action)	Alternative 2	Alternative 3
Black-footed Ferret Recovery (Conata Basin Only)	Acreage of Active Colonies Currently Outside Boundary Management Zone (Fall 2004)	20,310	15,140	19,290
	Predicted Acreage of Active Colonies By 2012	34,000 to 65,000	17,000 to 20,000	23,000 to 32,000
	Minimum Habitat Threshold Exceeded	Yes	Yes	Yes
Wildlife and Biodiversity Conservation	Acreage of Active Colonies Currently Outside Boundary Management Zone (Fall 2004)	26,010	16,360	22,360
	Predicted Acreage of Active Colonies By 2012	48,000 to 92,000	18,000 to 22,000	27,000 to 38,000
	Species at Risk Biological Determinations	No Adverse Determinations	Adverse Effects Possible	No Adverse Determinations
	Black-tailed Prairie Dog (Management Indicator Species) Objectives Met	Yes	Yes	Yes
Unwanted Colonization of Adjoining Agricultural Land	Compatible With Other Management Indicator Species Objectives	Yes	Yes	Yes
	Width of Boundary Management Zone	No Boundary Management Zone	Up to 1 Mile	Up to 0.5 Mile
	Authorized Rodenticide Use	Yes	Yes	Yes
	Potential Change of Livestock Forage Availability on National Grassland <sup>1</sup>	3,500 to 7,800	1,200 to 3,100	1,200 to 3,100

<sup>1</sup> Dependent on width (0.25 to 0.5 mile) of vegetation management barriers established by temporary fencing within boundary management zones.

Table 2-3. Effects summary for alternatives and several major issues on Fort Pierre National Grassland

Issue	Indicator(s)	Alternative 1 (No Action)	Alternative 2	Alternative 3
Wildlife and Biodiversity Conservation	Acreage of Active Colonies Currently Outside Boundary Management Zone (Fall 2004)	1,260	0	870
	Predicted Acreage of Active Colonies By 2012	1,900 to 2,700	0	1,100 to 1,400
	Species at Risk Biological Determinations	No Adverse Determinations	Adverse Effects Possible	No Adverse Determinations
	Black-tailed Prairie Dog (Management Indicator Species) Objectives Met, Including Establishment of a Colony Complex	Yes	Uncertain <sup>1</sup>	Likely <sup>2</sup>
	Compatible With Other Management Indicator Species Objectives	Yes	Yes	Yes
Unwanted Colonization of Adjoining Agricultural Lands	Boundary Management Zone	No Boundary Management Zone	Up to 1 Mile Encroachment Colonies Only	Up to 0.25 Mile Encroachment Colonies Only
Public Health & Safety and Damage to Facilities	Authorized Rodenticide Use	Yes	Yes	Yes
Potential Change of Livestock Forage Availability on National Grassland <sup>3</sup>	Animal Unit Months	300 to 700	200 to 400	200 to 400

<sup>1</sup> Developing a complex meeting minimum criteria would require additional colonies on adjoining lands being added to the complex through conservation agreements.

<sup>2</sup> Without additional colonies on adjoining lands being added to the complex through conservation agreements, it may take more than 10 years to develop a complex meeting minimum criteria.

<sup>3</sup> Dependent on width (0.25 to 0.5 mile) of vegetation management barriers established by temporary fencing within boundary management zones.



**Table 2-4. Effects summary for alternatives and several major issues on Oglala National Grassland**

Issue	Indicator(s)	Alternative 1 (No Action)	Alternative 2	Alternative 3
Wildlife and Biodiversity Conservation	Acreage of Active Colonies Currently Outside Boundary Management Zone (Fall 2004)	2,220	80	1,170
	Predicted Acreage of Active Colonies By 2012	3,300 to 6,800	<100	1,400 to 1,800
	Species at Risk Biological Determinations	No Adverse Determinations	Adverse Effects Possible	No Adverse Determinations
	Black-tailed Prairie Dog (Management Indicator Species) Objectives Met, Including Establishment of a Colony Complex	Yes	No	Yes
	Compatible With Other Management Indicator Species Objectives	Yes	Yes	Yes
Unwanted Colonization of Adjoining Agricultural Lands	Boundary Management Zone	No Boundary Management Zone	Up to 1 Mile Encroachment Colonies Only	Up to 0.5 Mile Encroachment Colonies Only
Public Health & Safety and Damage to Facilities	Authorized Rodenticide Use	Yes	Yes	Yes
Potential Change of Livestock Forage Availability on National Grassland <sup>1</sup>	Animal Unit Months	200 to 800	200 to 400	200 to 400

Dependent on width (0.25 to 0.5 mile) of vegetation management barriers established by temporary fencing within boundary management zones.

**Table 2-5. Summary of implementation costs by management tool**

Issue	Management Tools <sup>1</sup>	Alternative 1 (No Action)	Alternative 2	Alternative 3
Implementation Costs (see Appendix D)	Inventory and Monitoring	\$50,000	\$55,000	\$50,000
	Rodenticide	\$5,000	\$131,000	\$101,000
	Prairie Dog Live-trapping	\$90,000	\$12,500	\$25,000
	Management of Limited and Regulated Prairie Dog Shooting (MA 3.63)	Not Applicable	\$50,000	\$50,000
	Vegetation Management Fencing	\$250,000	\$75,000	\$113,000
	Visual Barrier Fencing	\$540,000	\$90,000	\$180,000

<sup>1</sup> Land adjustment and third party solutions costs are highly variable and are not displayed in the above table.

## CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.1 Introduction

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This chapter summarizes the physical, biological, social, and economic environment of the project area and effects of implementing each alternative. Additional information on the affected environment is in Chapter 3 of the Final EIS (LRMP FEIS) for the revised LRMP (USDA Forest Service 2002 at [www.fs.fed.us/ngp](http://www.fs.fed.us/ngp)). Major laws and regulations relating to protection, conservation and management of the resources and land uses that could be affected by one or more of the alternatives in this DEIS can be reviewed in the LRMP FEIS.

Effects are categorized as direct, indirect or cumulative for those resources and land uses that may be affected by the actions prescribed in the alternatives. It needs to be remembered that the affects of implementing Alternative 1, the no action alternative, were already addressed in the LRMP FEIS and are presented in this section. The only new effects resulting from implementation of Alternative 2 or 3 are limited to the designated boundary management zones. Effects in interior areas of national grasslands have already been evaluated in the LRMP FEIS. Direct environmental effects are those occurring at the same time and place as an action. Indirect environmental effects occur later in time or are spatially removed from the action. Cumulative effects are impacts on the environment that result from the proposed action(s) when added to other past, present, and reasonably foreseeable related future actions, regardless of what agency or person undertakes such actions. Cumulative impacts could result from individually minor but collectively significant actions taking place over a period of time (50 CFR 1508.7). As defined by ESA, cumulative effects are those effects of future state and private activities that are reasonably certain to occur. Future federal actions that have been through consultation are included in the environmental baseline; other future federal actions will be consulted on separately, and therefore need not be considered in cumulative effects analysis. Most of the cumulative effects associated with this proposed action are disclosed in Section 3.14 of this document and in the Biological Assessment and Evaluation (Appendix E).

Most effects are described in terms of the indicators identified in Chapter 1 of this document, and only those resources or activities affected by implementation of one or more alternatives are addressed in detail. Most of the analyses supporting this DEIS were used to predict effects out to the year 2012 and are based on changes in prairie dog populations, primarily in response to rodenticide use and other management tools. The year 2012 reflects a 10 year projection from 2002 when the LRMP ROD was signed. It needs to be highlighted that analyses of Alternatives 2 and 3 assume all colonies within boundary management zones are eventually treated with rodenticide. In reality, many of these colonies will be treated but some will not because they are not encroaching on adjoining lands. Therefore, predictions of rodenticide use and future prairie dog colony acreages should be considered maximums.

Basic information on past, current and predicted prairie dog populations in the project area is presented in Tables 3-1 and 3-2. Distribution maps of current (Fall 2004) prairie dog colonies are provided in Appendix A – Maps. A prairie dog colony growth (expansion) model was used to predict future colony acreages (Table 3-2). This model has performed



reasonably well in the past and takes into consideration differences in colony expansion rates during droughts versus years of normal or above normal precipitation. Slight refinements were made in the model to further improve its performance. Table 3-2 also provides predictions of the annual rodenticide use under each alternative. A rodenticide use model was used to generate these predictions. This model incorporates both the acres of initial and follow-up rodenticide use, based on a return interval with rodenticide once every 3 years after initial rodenticide application and a 20 percent loss in colony acreage for each retreatment after the first two rodenticide applications. These models are maintained as part of the project record in the Supervisor's Office in Chadron, Nebraska.

Table 3-1. Black-tailed prairie dog colonies in the project area

Area	Active Colony Acreage 1996-97 <sup>1</sup>	Active Colony Acreage 2002 <sup>2</sup>	Active Colony Acreage 2004 <sup>3</sup>	Number Of Active Colonies 2004	Average Colony Acreage (range) 2004
Buffalo Gap N.G.	13,280	17,690	26,030 <sup>4</sup>	309	84 (<1 to 4,060)
Conata Basin Ferret Habitat	10,890	12,560	20,310 <sup>4</sup>	112	181 (<1 to 4,060)
Smithwick Ferret Habitat	300	670	990	18	55 (<1 to 334)
Fort Pierre N.G.	720	1,110	1,340	53	25 (<1 to 313)
Timber/Sand Creek Colony Complex	340	550	850	15	57 (<1 to 313)
Oglala N.G. and Colony Complex	740	1,620	2,220	26	85 (<1 to 1,100)
Nebraska N.F. (Bessey)	70	80	90	9	10 (1 to 25)
Combined	14,810	20,500	29,680	397	75 (<1 to 4,060)

<sup>1</sup> Colony acreage used in LRMP FEIS analyses<sup>2</sup> Colony acreage when Record of Decision was signed for LRMP<sup>3</sup> Global positioning system (GPS) survey information<sup>4</sup> Does not include 6,780 acres of colonies treated with rodenticide in 2004

Table 3-2. Effects of alternatives on black-tailed prairie dog colonies and their management

Alternative And National Grassland/Forest	Current Colony Acreage Subject to Possible Rodenticide Use <sup>1</sup>	Predicted Annual Rodenticide Use <sup>2</sup> (acres)	Current Active Colony Acreage <sup>3</sup> (Rodenticide Unlikely)	Current Number of Active Colonies / Average Colony Size <sup>3</sup> (Rodenticide Unlikely)	Predicted Colony Acreage in 2012 <sup>4</sup>
<b>Alternative 1</b>					
Buffalo Gap N.G.	480	<100	26,010 <sup>5</sup>	308 colonies / 84 acres	48,000 to 92,000 <sup>6</sup>
Conata Basin Ferret Habitat	200	<100	20,310 <sup>5</sup>	112 colonies / 181 acres	34,000 to 65,000 <sup>6</sup>
Smithwick Ferret Habitat	0	0	990	18 colonies / 55 acres	3,000 to 5,900
Fort Pierre N.G.	80	<100	1,260	49 colonies / 26 acres	1,900 to 2,700
Colony Complex	80	<100	770	11 colonies / 69 acres	1,100 to 1,700
Oglala N.G. and Colony Complex	0	<100	2,220	26 colonies / 85 acres	3,300 to 6,800
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	560	<300	29,580	392 colonies / 75 acres	53,000 to 102,000 <sup>6</sup>
<b>Alternative 2</b>					
Buffalo Gap N.G.	16,450	8,900 to 10,500	16,360	117 colonies / 140 acres	18,000 to 22,000
Conata Basin Ferret Habitat	8,410	4,700 to 6,200	15,140	82 colonies / 185 acres	17,000 to 20,000
Smithwick Ferret Habitat	460	230 to 290	530	8 colonies / 66 acres	700 to 800
Fort Pierre N.G.	1,340	470	0	0	0
Colony Complex	850	300	0	0	0
Oglala N.G. and Colony Complex	2,140	750	80	2 colonies / 40 acres	<100
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	19,930	10,120 to 11,720	16,530	128 colonies / 129 acres	18,000 to 22,000
<b>Alternative 3</b>					
Buffalo Gap N.G.	10,450	6,800 to 8,700	22,360	190 colonies / 118 acres	27,000 to 38,000
Conata Basin Ferret Habitat	4,260	3,300 to 6,200	19,290	101 colonies / 191 acres	23,000 to 32,000
Smithwick Ferret Habitat	210	160 to 290	780	14 colonies / 56 acres	1,300 to 1,800
Fort Pierre N.G.	470	120 to 210	870	36 colonies / 24 acres	1,100 to 1,400
Colony Complex	300	90 to 140	550	10 colonies / 52 acres	700 to 900
Oglala N.G. and Colony Complex	1,050	410 to 510	1,170	7 colonies / 167 acres	1,400 to 1,800
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	11,970	7,330 to 9,420	24,490	242 colonies / 101 acres	30,000 to 41,000

See footnotes on following page.



- <sup>1</sup> Based on GPS surveys in 2004 and includes colonies that may be a risk to health and safety or facilities (all alternatives) or located in boundary management zones (Alternatives 2 and 3); includes 6,780 acres of colonies treated with rodenticide in 2004
- <sup>2</sup> Includes colonies treated with rodenticide in 2004 and both initial and follow-up (maintenance) rodenticide applications
- <sup>3</sup> Based on GPS surveys in 2004; includes colonies that are not in boundary management zones or not currently a risk to health and safety or infrastructure
- <sup>4</sup> Projections for Alternatives 2 and 3 assume that some colonies within boundary management zones would not be treated with rodenticide
- <sup>5</sup> Does not include those colonies treated in 2004 because of unwanted colonization of adjoining agricultural lands (6,320 acres); prairie dog populations in these colonies are allowed to recover (re-populate) under Alternative 1; under Alternative 1, only those colonies that are potential risks to health and safety or facilities are subject to possible rodenticide use
- <sup>6</sup> Does not include colonies treated with rodenticide in 2004; at the upper end of the range, further colony expansion was limited by available habitat (65,000 acres) in Conata Basin; the likelihood of prairie dog colony acreage ever reaching the upper end of the predicted range is low due to anticipated landowner intolerance and an insufficient amount of preferred habitat in some areas

## 3.2 Air Resources

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### 3.2.1 Affected Environment

The project area occurs in four designated airsheds:

- 1) North Plains (Fort Pierre and Buffalo Gap National Grasslands - East Half),
- 2) South Plains (Samuel R. McKelvie National Forest and Nebraska National Forest Bessey Ranger District),
- 3) Thunder Basin (Oglala and Buffalo Gap National Grasslands – West Half),
- 4) Wheatland (Nebraska National Forest – Pine Ridge Ranger District).

Each airshed is discussed in more detail in the LRMP FEIS. Criteria to determine airshed boundaries include topography, upper-level air flow, and political/civil boundaries where physical boundaries are not apparent. Airsheds are not fixed boundaries like watersheds but none-the-less, serve as useful mechanisms for grouping management areas likely to have similar air quality. Each airshed has the potential to be affected by pollution sources and management activities both in and outside airshed boundaries.

### 3.2.2 Environmental Consequences

Currently, air quality standards are being met in all airsheds except the Thunder Basin airshed where there is one non-attainment area associated with oil and gas development in Montana and Wyoming (USDA Forest Service 2001).

It is important to point out that provisions of the Clean Air Act relate to human-caused air pollution. As native wildlife and part of the natural environment, black-tailed prairie dogs were not considered air pollution sources in the LRMP FEIS. It is acknowledged in the LRMP FEIS that wind erosion may be accelerated on some prairie dog colonies. However, given the relatively small acreages of prairie dog colonies in each airshed, it is highly unlikely that prairie dog colonies are a significant air quality factor in any airshed within the project area. Highest rates of soil erosion (wind and water) in the northern plains region are

attributed to cultivated croplands (USDA NRCS 1996). Given the relatively minor part of the landscape occupied by prairie dogs, it is highly unlikely that prairie dog colonies significant sources of atmospheric dust across the northern plains. Also, there appears to be no published or unpublished references documenting and quantifying comparative wind (or water) erosion rates on and off prairie dog colonies. For these reasons plus the fact that black-tailed prairie dogs are native to this area, no further analyses were conducted on the direct, indirect or cumulative effects of the alternatives on air quality.

### 3.3 Soil and Water Resources

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#### 3.3.1 Affected Environment

Black-tailed prairie dog colonies are found on a variety of soils (Clippinger 1989, Reading and Matchett 1997, Reid 1954), but prairie dogs prefer deep and moderately to well-drained soils on gentle slopes. Preferred soils are silty, clayey or loamy, but colonies will expand into less desirable soils that are shallow and/or rocky. They avoid soils that are frequently flooded or excessively sandy and unable to support burrow systems. Prairie dogs also select for soils that have been previously disturbed (Knowles 1986, Licht and Sanchez 1993). This includes disturbances commonly associated with past homestead activity, abandoned fields and livestock concentrations (water sources and developments, mineral sites, supplemental feeding sites, oilers, corrals). Prairie dogs in the project area also select rangelands that were pitted or ripped (soil disturbance) in the 1960s and 1970s for livestock forage improvement.

Soils in the project area are predominately from sandstone and shale. Much of the area is considered to be moderate to well-drained with moderate to slow infiltration rates. Some soils have high clay content that slows water infiltration rates. The soils in the project area are subject to wind and water erosion. Erosion rates increase as slopes exceed 5 to 10 percent. The geology of the area is predominately stratified sedimentary claystone, siltstone, mudstone, shale, limestone, and sandstone from the marine and or terrestrial Cretaceous, Tertiary, Pleistocene, and Holocene environments. When erosion incises these soft geologic formations, erosion rates increase dramatically resulting in badlands formations.

Precipitation in the project area comes primarily as rain. Normal precipitation ranges from 15 to 21 inches per year. Precipitation events are typically high intensity storms of short duration resulting in localized flooding. Drought is a common and reoccurring event in the project area. Drought is defined as any year or successive years with 75 percent or less of average annual precipitation, recognizing that seasonal distribution of precipitation also influences drought severity (Reece et al. 1991). From 1910 through 1980 (71 years), annual precipitation was below average for 37 years, and on seven occasions, at least three consecutive years were below average at the Cottonwood Range Experiment Station east of Wall, South Dakota (Johnson 1981). Eighteen (25 percent) of the 71 years met the drought criterion and during two of those years (1936 and 1939), annual precipitation was approximately 50 percent of average. Information presented by Holechek et al. (2001) indicates that for the period 1944 through 1984, drought occurred in 21 percent of the years on the northern plains.

Watersheds in the project area include tributaries to Bad River, Cheyenne River, Rapid Creek and White River in South Dakota. Watersheds in Nebraska include Hat Creek and its



tributaries. Hat Creek is a tributary to White River. Watersheds range in elevation from approximately 1,800 to 4,000 feet. Acreages of prairie dog colonies in fourth order watersheds in the project area are presented in Table 3-3. This information is presented only for the South Dakota project area because surveys for prairie dog colonies on other land jurisdictions in Nebraska were not available. The information in these tables demonstrates that prairie dog colonies on national grasslands account for relatively small acreages within 4<sup>th</sup> order watersheds. The main 4<sup>th</sup> order watersheds (HUCs 10140202 and 101402201) containing the larger prairie dog colony complexes in Conata Basin and adjoining Pine Ridge Indian Reservation have approximately 4 percent or less of their land area in prairie dog colonies. National grassland colonies accounted for approximately 1 percent or less of those watersheds. As you go up in the watersheds, prairie dog colonies occupy an increasingly larger percentage of some watersheds. In a sample of ninety five 6<sup>th</sup> order watersheds on the Buffalo Gap and Fort Pierre National Grasslands, only 10 have more than 4 percent of the watershed in prairie dog colonies and all of those colonies are located in Conata Basin on the Buffalo Gap National Grassland. The highest coverage of prairie dogs in a 6<sup>th</sup> order watershed in Conata Basin is approximately 52 percent, of which 47 percent is located on national grassland. Percentages of watersheds occupied by prairie dog colonies on the Oglala National Grassland are probably similar to those on the Fort Pierre and Buffalo Gap National Grasslands, outside Conata Basin.

Impaired waterbodies in the project area on the South Dakota 303(d) list include segments of Rapid Creek and Cheyenne, Bad and White Rivers. Each of these waterbodies have dissolved or suspended solids as a basis for their listing, pursuant to the Clean Water Act. There are no waterbodies listed in the Nebraska portion of the project area that exceed dissolved or suspended solids standards.

**Table 3-3. Acreages of black-tailed prairie dog colonies in 4th order watersheds**

Hydrologic Unit Code (HUC)	National Grassland	Watershed Acreage <sup>1</sup>	Total Prairie Dog Colony Acreage <sup>1</sup> (% watershed area)	Total NFS Prairie Dog Colony Acreage (% watershed area)
10120109	Buffalo Gap	1,360,624	17,920 (1.3%)	3,434 (0.3%)
10120111	Buffalo Gap	1,005,712	6,652 (0.7%)	216 (0.0%)
10140101	Fort Pierre	2,857,289	4,585 (0.2%)	942 (0.0%)
10140102	Fort Pierre & Buffalo Gap	2,022,920	4,123 (0.2%)	1,582 (0.1%)
10140104	Fort Pierre	440,710	1,358 (0.3%)	166 (0.0%)
10140201 <sup>2</sup>	Buffalo Gap	2,444,602	100,545 (4.1%)	2,536 (0.1%)
10140202	Buffalo Gap	1,551,165	30,147 (1.9%)	18,315 (1.2%)

<sup>1</sup> 2004 GPS survey data for all land ownerships

<sup>2</sup> Watershed extends into Nebraska.



### **3.3.2 Environmental Consequences**

Soils and prairie dog relationships and interactions are poorly studied and understood. This includes the effects of prairie dog colonization on soil development (pedogenesis) and surface erosion. Soil mixing (pedoturbation) from prairie dog burrowing is undoubtedly important in soil development (Carlson and White 1987) but the extent that prairie dogs contribute to soil development relative to soil loss from wind and water surface erosion on prairie dog colonies is unknown. Working on a white-tailed prairie dog colony on the Hutton Lake National Wildlife Refuge in eastern Wyoming, Clark (1970) reported no evidence of increased erosion on the colony and suggested that the benefits from prairie dogs adding organic materials, increasing air and water penetration, and mixing soils might more than offset any accelerated erosion that might occur on a prairie dog colony. Koford reported in 1958 that we do not know enough about prairie dog-soil interactions to adequately assess the comparative effects of prairie dog colonization on soil development and erosion rates (Koford 1958). This same lack of comprehensive and quantitative information still appears to exist today.

Water erosion from all lands, including colonized and uncolonized grasslands, are sources of sedimentation into rivers and streams, but as stated previously, there appears to be no published or unpublished references documenting and quantifying comparative water (or wind) erosion rates on and off prairie dog colonies. So it is difficult to quantitatively assess soil and sedimentation rates from prairie dog colonies. Also, the highest rates of soil erosion (water and wind) in the northern plains region are attributed to cultivated croplands (USDA NRCS 1996), and when considering the relative amounts of cultivated cropland versus black-tailed prairie dog colonies across much of the project area, it seems unlikely that prairie dog colonies are significant sedimentation sources contributing to the impaired waterbodies identified above. Another difficulty in quantifying soil erosion rates on and off prairie dog colonies is that vegetation conditions within and between prairie dog colonies are highly variable based on years of colonization, concurrent livestock grazing practices and numerous other confounding variables. This variability would have to be accounted in assessing soil erosion rates on prairie dog colonies.

For these reasons and the fact that black-tailed prairie dogs, as native wildlife and part of the natural environment, were not identified as significant agents of soil and water degradation in the LRMP FEIS, no further analyses were conducted on the direct, indirect or cumulative effects of the alternatives on soil and water resources and the hydrologic function of watersheds.

## **3.4 Heritage Resources**

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### **3.4.1 Affected Environment**

Evidence for human activity within the project area spans the entire chronological sequence of the Great Plains culture area (Table 3-4) (Hannus and Winham 1999, Prentiss and Rosenberg 1996). Paleoindians are typically characterized as big game hunters who occupied large territories, tracking herds and utilizing a communal hunting strategy. Site types are generally kill and butchery localities. In response to significant climatic changes, Plains groups appear to have adapted their subsistence strategies accordingly during the

Archaic period. However, evidence for increased utilization of plant and small game resources may be as much a product of differential preservation. Temporally diagnostic projectile point styles change from lanceolate to large side notched types. Site types are generally scatters of chipped stone representing quarry sites or short-term occupation. Hearth features may be present. The Late Prehistoric period is recognized typologically by a technological shift from the atlatl and dart to the bow and arrow; projectile points change from large to small side notched types. Site types are similar to the Archaic period. "Direct or indirect contact with European groups ushered in the Protohistoric period...(with)...the introduction of the horse and the gun" (Hannus and Winham 1999:37). Euro-American settlement in the project area occurred mainly during the homesteading era between the 1880s and 1930s. Site features generally include depressions, foundations and concentrations of historic artifacts. Prairie dog colonies are commonly found in areas with past homesteading activity.

**Table 3-4. Approximate chronology for the project area**

<b>Cultural Tradition</b>	<b>Time Period</b>
Paleoindian	12,000 – 8000 years before present (BP)
Early Archaic	8000 – 4500 BP
Middle Archaic	4500 – 3500 BP
Late Archaic	3500 – 1500 BP (AD 450)
Late Prehistoric	1500 BP (AD 450) – 400 BP (AD 1550)
Protohistoric	AD 1550 - 1750
Historic	AD 1750 - 1950

Approximately 16 percent (168,893 acres) of the project area has been intensively surveyed for cultural resources and approximately 1150 sites have been recorded. Approximately 60 percent have been identified as prehistoric resources and 40 percent as historic resources. Two sites, the historic Bessey Nursery and the Hudson-Meng Bison Kill Site, are listed on the National Registry of Historic Places (NRHP). Approximately 10 percent have been evaluated as Eligible to the NRHP, 53 percent are Not Eligible to the NRHP, and 36 percent have not been evaluated against the criteria for eligibility to the NRHP.

All undertakings (as defined in 36 CFR part 800.16[y]) are conducted in accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA). Heritage resources listed on or eligible to the NRHP are avoided during the implementation phase of any new ground disturbing project proposed on the Forest. If a resource cannot be avoided, mitigation measures are applied to resolve any potential adverse effects to the resource.

The present condition of heritage resources on the Forest is on course with the desired condition described in the LRMP (Goal 2b, Heritage Sites, and Standards and Guidelines, section N, Heritage Resources).

If any new and unforeseen ground disturbing activities are proposed as a result of this proposed plan, such as wood post fence construction, the activity would be treated as a separate and distinct undertaking, triggering its own Section 106 process.



### **3.4.2 Environmental Consequences**

A proposed action would be considered significant if it resulted in an “adverse effect” (as defined in 36 CFR part 800.5) to a property that is listed on, eligible for, or potentially eligible for listing on the National Register of Historic Places (NRHP). Potential adverse effects can usually be mitigated through site-specific measures.

Prairie dog management activities in the alternatives have no potential to directly or indirectly affect heritage resources in the project area. None of the tools, including rodenticide use, live trapping, regulated prairie dog shooting, vegetation management, livestock grazing coordination, or landownership adjustment, involve significant new ground disturbing activities. Since the alternatives would not affect heritage resources, it would not change the current condition of heritage resources on the Forest, and it would not move it towards or away from the desired condition as described in the LRMP. For these reasons, no further analyses were conducted on the direct, indirect or cumulative effects of the alternatives on heritage resources in the project area.

## **3.5 Paleontological Resources**

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### **3.5.1 Affected Environment**

The paleontological resource within the project area spans a wide realm of depositional environments ranging from deep marine deposits to terrestrial volcanic deposits containing paleosols. However, geologic and paleontologic records span a relatively short time with the oldest exposed unit, the Late Cretaceous Mowry Formation, located on the Fall River Ranger District (west half Buffalo Gap National Grassland) to the youngest unit, Pleistocene deposits which have produced the well-known Hudson-Meng Bison Bone Bed, located on the Oglala National Grassland and the two bull mammoths that locked tusks and died joined together.

Marine geologic units from the Buffalo Gap and Fort Pierre National Grasslands and northern portion of the Oglala National Grassland were deposited from the Late Cretaceous Interior Seaway as shales, siltstones, and limestones. Terrestrial geologic units were deposited on top of the Cretaceous units from volcanic activity west on these NFS units. Preservation of the paleontological resources in the project area varies from museum quality to very poorly preserved. Vertebrate fossils range from marine reptiles, such as 25 foot mosasaurs and 15 foot fish, to terrestrial mammals such as Brontotheres (three ton rhino-looking animal) to invertebrates such as bivalves, lobsters, ammonites, and snails.

Various partners and fossil permittees have documented 822 paleontological sites in the project area, all since 1991. Five areas are established as Paleontological Special Interest Areas, requiring a permit to collect any fossil. These areas are to protect the resource intact.

### **3.5.2 Environmental Consequences**

All alternatives prescribe mostly non-ground disturbing activities, and new ground disturbance would be minimal. Any new disturbance requires additional environmental analysis and public disclosure. Therefore, paleontological resources are not likely to be negatively impacted under these alternatives, and the activities prescribed under the alternatives are compliant with the paleontological resources direction in the LRMP (Chapter



1 Grassland-wide Direction Section E. Paleontological Resources #3). For these reasons, no further analyses were conducted on the direct, indirect or cumulative effects of the alternatives on paleontological resources in the project area.

## 3.6 Rangeland Resources

### 3.6.1 Affected Environment

There are several dominant ecological sites within the mixed grass prairies of the project area, including clayey, shallow clay, loamy, and thin upland. Each ecological site can support two or more plant communities. Annual herbage production between the different plant communities within an ecological site during years of normal precipitation patterns typically varies from more than 1,400 pounds per acre, where cool season midgrass species dominate, to less than 900 pounds per acre, where warm season shortgrass species are dominant. Heavily grazed and impacted sites commonly support plant communities dominated by annual grasses, half shrubs and forbs.

Prairie dog colonies are found on each of the dominant ecological sites, as well as on some of the less extensive ecological sites in the project area. In addition to foraging, prairie dogs also clip vegetation to maintain suitable visibility for predator detection and to maintain a complex social system (Fagerstone and Ramey 1996). Long-term prairie dog colonization promotes shortgrass and annual communities (Fagerstone and Ramey 1996). Lethal and non-lethal management to reduce or remove selected prairie dog populations' results in a shift towards midgrass perennial plant communities. Drought results in reduced annual plant productivity and accelerated expansion and establishment of prairie dog colonies. Detailed descriptions of these ecological sites and the different plant communities resulting from a variety of natural and other disturbances are presented in the Rangeland Management Specialist Report maintained in the project record.

The national grasslands are grazed annually by permitted livestock. Historically, livestock grazing has been the predominant use on the national grasslands. Heavy livestock grazing rates were reduced to more moderate levels in 1978 across the Conata Basin to bring grazing in line with carrying capacity and to help regulate and manage prairie dog populations (USDA Forest Service 1978). These stocking adjustments are still in effect, while stocking on most other NFS lands in the project area remain at moderate levels.

Animal unit months (AUMs) of livestock grazing on national grasslands in 2001-2002 are listed in Table 3-5. Authorized and actual use may vary annually and are typically less than permitted numbers, especially during drought periods. For example, in 2004, actual use was approximately 34 percent below permitted numbers, primarily in response to drought conditions. In addition to the reduced grazing levels, other grazing modifications were also applied during the 2004 drought, including delayed turn-on dates and faster rotations through the grazing units.

**Table 3-5. Animal unit months (AUMs) of livestock grazing, 2001-2002**

Area	Permitted AUMs	Authorized AUMS	Actual AUMs
Buffalo Gap N.G.	190,739	185,739	166,993
Fort Pierre N.G.	51,206	50,757	47,923

Area	Permitted AUMs	Authorized AUMS	Actual AUMs
Oglala N.G.	28,817	27,056	25,070
All Areas Combined	270,762	263,552	239,986

### 3.6.2 Environmental Consequences

Direct effects include:

- Vegetation loss (standing biomass) from prairie dog foraging and clipping,
- Vegetation gain (standing biomass) following rodenticide application and removal of prairie dogs,
- Shifts in plant communities due to the long-term presence or absence of prairie dogs and other herbivores.
- Changes in livestock forage availability resulting from annual livestock grazing modifications or removal to facilitate development of vegetation barriers is an indirect effect resulting from prairie dog management.

This analysis focuses on the environmental consequences of implementing Alternatives 2 and 3. Effects of prairie dog conservation and management on rangeland resources and livestock grazing under Alternative 1 have already been considered in the LRMP FEIS. Alternatives 2 and 3 only propose management changes along property boundaries, so this analysis is limited to effects in the boundary management zones and not interior areas of NFS lands.

#### Herbage Production and Livestock Forage Availability.

Under Alternatives 2 and 3, approximately 19,930 and 11,970 acres, respectively, of prairie dog colonies in the boundary management zones may be treated with rodenticide over the next several years. If prairie dog population reductions are maintained in the management zones and concurrent herbivory by livestock is not excessive, eventual long-term shifts in plant communities in the boundary zones could result in substantial increases in herbage production, possibly up to 500 pounds per acre of additional annual production during years with near normal precipitation patterns. The predicted increase in annual productivity in the absence of prairie dogs is the result of an eventual shift from plant communities dominated by warm season shortgrasses or annual grasses and forbs to communities dominated by cool season midgrasses. Under Alternative 1, there are no boundary management zones, but it is estimated that approximately 560 acres of colonies would be treated with rodenticide to reduce public health and safety risks. A comparable increase in annual plant productivity could occur in these colonies after a prolonged absence of prairie dogs. However, increases in herbage production in the boundary management zones would likely be more than offset by expansion of prairie dog colonies in interior areas of the national grasslands. Most colonies in interior areas of the national grasslands are likely to continue expansion with corresponding decreases in herbage production.

Increased herbage as a result of prairie dog population reductions and removal may result in additional livestock forage and enhanced habitat conditions for other wildlife species that prefer taller grassland cover. This would include, but is not limited to, species like greater prairie chicken, plains sharp-tailed grouse, short-eared owl and several species of upland nesting waterfowl. In terms of livestock forage availability, increased plant productivity in



the boundary management zones may not always equate to increased forage for permitted livestock. Temporary annual adjustments to reduce or remove livestock grazing in some boundary management zones to help develop and maintain vegetation barriers, especially during droughts, are anticipated. Direction to modify livestock grazing to reduce impacts of drought on grassland wildlife species, including prairie dogs, is provided in the LRMP.

Table 3-6 displays the potential annual loss of AUMs due to vegetation management fencing and temporary livestock grazing modifications or reductions in boundary management zones.

**Table 3-6. Potential annual loss in livestock AUMs**

Area	Alternative 1	Alternative 2	Alternative 3
Buffalo Gap N.G.	3,500 to 7,800	1,200 to 3,100	1,200 to 3,100
Fort Pierre N.G.	300 to 700	200 to 400	200 to 400
Oglala N.G.	200 to 800	200 to 400	200 to 400
All Areas Combined	4,000 to 9,300	1,600 to 3,900	1,600 to 3,900

As indicated, quantity of livestock forage typically increases in colonies following prairie dog reductions or removal, depending on concurrent livestock grazing management. On the other hand, forage quality within these colonies may actually decrease because of reduced live-to-dead material ratios, nitrogen content and digestibility of forage in the absence of prairie dog foraging and clipping (Whicker and Detling 1988). The extent of these changes following prairie dog reductions is dependant on the years of on-site colonization and vegetation conditions within a colony. There may be some nutritional advantages for herbivores, including cattle, to have access to prairie dog colonies for grazing. However, it is very difficult to quantify the combined and concurrent effects of changes in forage quantity (availability) and quality on livestock grazing as a result of prairie dog colonization and management. Therefore, forage availability is the only factor considered in this analysis to compare effects of implementing each of the three alternatives on livestock grazing on the national grasslands.

### 3.7 Species at Risk

#### 3.7.1 Affected Environment

The species at risk included in this analysis include federally listed threatened and endangered species (Table 3-7) and species designated as sensitive by Region 2 of the Forest Service (Table 3-8). There are no additional candidates or proposed species for federal protection under ESA in the project area at this time. Effects of prairie dog conservation and management on most of these species were initially evaluated as part of the recent LRMP revision process, and these evaluations are documented in Chapter 3 and Appendix H of the LRMP FEIS. However, several new species were recently added to the Forest Service's sensitive species list, and several of these species occur in the project area and are evaluated in this analysis. The federally protected species in the project area that are evaluated in detail in this analysis are identified in Table 3-7. Two federally protected species, American burying beetle and blowout penstemon, were eliminated from further detailed study. Both species are endangered and are found on NFS lands in the Nebraska Sand Hills. Because



there is no rodenticide use prescribed under any of the three alternatives for this area, there are no possible effects on American burying beetles. Blowout penstemon was eliminated from further detailed analysis because it occurs on unstable soils in sand blowouts, unsuitable sites for prairie dog colonization.

**Table 3-7. Species federally protected under ESA that may be affected and their known distribution**

Species and Status <sup>1</sup>	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. (Bessey R.D.)
Black-footed Ferret (E)	X <sup>2</sup>	---	---	---
Whooping Crane (E)	X	X	---	X <sup>3</sup>
Bald Eagle (T)	X	X	X	X

<sup>1</sup> E = endangered, T = threatened

<sup>2</sup> Non-essential experimental population

<sup>3</sup> Downstream from Nebraska N.F.

The black-footed ferret population in the Conata Basin/Badlands black-footed ferret reintroduction area on the Buffalo Gap National Grassland and Badlands National Park is listed as a non-essential experimental population under Section 10j of ESA. Under this classification that portion of the population on the national grassland is treated as a “proposed” species for Section 7 consultation purposes under ESA. On the adjoining Badlands National Park, the ferret population is treated like a “threatened” species for consultation purposes. The most recent monitoring during the fall and winter of 2004/2005 resulted in 70 wild-born litters being located on the national grasslands. These surveys indicated a minimum ferret population of 204.

Migrating whooping cranes are rarely observed on NFS lands and waters in the project area. Past confirmed sightings have involved a few instances where cranes landed on uplands, presumably to rest and possibly feed, and on another occasion, whooping cranes were observed on the Middle Loup River near the Nebraska National Forest, Bessey Ranger District.

Bald eagles are migrants in the project area and are occasionally observed hunting over prairie dog colonies near the Cheyenne and White Rivers in South Dakota. It is possible that bald eagle nesting could occur in the not-so-distant future in or near the project area.

Sensitive species in the project area that are evaluated in detail in this analysis are listed in Table 3-8. The black-tailed prairie dog is listed as a sensitive species. Other sensitive wildlife species closely associated with prairie dogs in the project area include western burrowing owl and ferruginous hawk. The mountain plover is also commonly associated with prairie dog colonies, but the only confirmed record in recent years occurred during the summer of 2004 when a single bird was observed in Conata Basin. The project area is considered outside their current breeding range. The association between swift fox and black-tailed prairie dog continues to be debated. There’s little doubt that swift fox populations are bolstered when large expansive prairie dog colonies dominate grassland landscapes, but the value of smaller more disjunct prairie dog colonies and complexes to swift fox is uncertain. Some biologists feel as though smaller colonies and complexes may

serve as a population sink for swift fox because of increased predation rates by golden eagle and coyote on the smaller prairie dog colonies.

The recently designated sensitive species that are analyzed in detail in this analysis include greater sage grouse, grasshopper sparrow, Brewer's sparrow, short-eared owl, chestnut-collared longspur, McCown's longspur, and northern harrier. These species may be seen on prairie dog colonies but none are known to be closely associated with prairie dogs.

**Table 3-8. Sensitive species and their known distribution in the project area**

Species	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. (Bessey R.D.)
Black-tailed Prairie Dog	X	X	X	X
Swift Fox	X	X	X	---
Greater Prairie Chicken	---	X	---	X
Long-billed Curlew	X	X	X	X
Greater Sage Grouse	X	---	---	---
Northern Harrier	X	X	X	X
Ferruginous Hawk	X	X	X	X
Chestnut-collared Longspur	X	X	X	X
McCown's Longspur	---	---	X	---
Short-eared Owl	X	X	X	X
Western Burrowing Owl	X	X	X	X
Mountain Plover	X <sup>1</sup>	---	---	---
Brewer's Sparrow	X	---	---	---
Grasshopper Sparrow	X	X	X	X
Trumpeter Swan	X	---	---	---
Regal Fritillary	X	X	---	X

<sup>1</sup> One recent confirmed incidental sighting

Numerous sensitive species were eliminated from further detailed analysis. For the most part, these are species known or suspected of occurring in the general project area but are not known to occur in or make significant use of prairie dog colonies. Also, some species were eliminated because they are unaffected by prairie dog foraging, burrowing or management activities, including rodenticide use. More detailed explanations of why each species was eliminated from further detailed analysis are provided in the Biological Assessment and Evaluation (Appendix E).

Those species eliminated from further detailed analysis are:

Fringed Myotis	Northern Goshawk
Townsend's Big-eared Bat	Peregrine Falcon
American Bittern	Yellow-billed Cuckoo
Black Tern	Northern Leopard Frog
Loggerhead Shrike	Plains Leopard Frog

Ottoe Skipper  
Finescale Dace  
Northern Redbelly Dace  
Pearl Dace  
Sturgeon Chub  
Plains Minnow  
Barr's Milkvetch  
Dakota Buckwheat

Hall's Bulrush  
Lesser Bladderwort  
Lesser Panicked Sedge  
Lesser Yellow Lady's Slipper  
Slender Cottongrass  
Spinulose Woodfern  
Yellow Widelip Orchid

### 3.7.2 Environmental Consequences

This section summarizes direct, indirect and cumulative effects of expanded prairie dog rodenticide use and prairie dog shooting on species at risk, including black-tailed prairie dogs. More detailed analyses of effects on species at risk are included in the Biological Assessment and Evaluation (Appendix E). Non-lethal methods of prairie dog management were evaluated in the LRMP FEIS. Possible direct effects include:

- Reductions in prairie dog populations (within selected colonies) and distribution,
- Primary and secondary poisoning of wildlife,
- Reduced prey base for black-footed ferrets and other predators.

Possible indirect effects include:

- Change in grassland vegetation structure, burrow availability and habitat suitability for other wildlife species following rodenticide application and prairie dog removal,
- Change in grassland structure, burrow availability and habitat suitability for other wildlife species as a result of prairie dog colony expansion in the absence of rodenticide and other prairie dog management tools,
- Risk of lead poisoning to predators and scavengers feeding on prairie dogs that have been shot,
- Disruption of prairie dog social organization as a result of prairie dog shooting,
- Disturbance of prairie dogs and other wildlife by prairie dog shooters and shooting.

All direct, indirect and cumulative effects on each species at risk under each alternative are considered and evaluated in detail in the Biological Assessment and Evaluation (Appendix E). Additional cumulative effects are discussed in Section 3.14 of this document.

The evaluation process culminates with a "biological determination". The menu of biological determinations for federally listed and protected threatened and endangered species is as follows:

- No effect (NE),
- May affect, not likely to adversely affect (MA-NLAA),
- May affect, likely to adversely affect (MA-LAA).



The menu of biological determinations for species proposed for protection under the Endangered Species Act is:

- Not likely to jeopardize continued existence (NLJ),
- Likely to jeopardize continued existence (LJ).

It is important to point out that there has been no critical habitat designated or proposed for any portion of the project area.

The menu of biological determinations identified above for proposed species is applied to the black-footed ferret. Although the species is federally listed as endangered, the reintroduced Conata Basin population is designated as a “non-essential experimental population” under Section 10j of ESA (U.S. Fish and Wildlife Service 1994) and treated as a proposed species for consultation purposes under Section 7 of ESA.

Forest Service Manual 2670 establishes the menu of biological determinations for sensitive species:

- No impact (NI),
- Beneficial impact (BI),
- May adversely impact individuals but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide (MAII),
- Likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of species viability range-wide (LRLV).

In this analysis, biological determinations are made for each species under each alternative and for each national grassland and forest. This provides consistency with the approach used in the Biological Assessment and Evaluation for the revised LRMP (Appendix H in the LRMP FEIS). This is the most appropriate manner of making biological determinations, given the large distances between the individual national grasslands and forests in the project area.

The biological determinations for federally listed species in the project area are provided in Table 3-9. The abbreviation NA stands for “not applicable” meaning that the species does not occur in the area, and a biological determination is not needed.

The biological determination for the black-footed ferret in Table 3-9 is for the non-essential experimental population in the Conata Basin/Badlands reintroduction area. A map of the non-essential experimental population area is provided in Appendix A. As previously discussed, that portion of the Conata Basin/Badlands experimental ferret population using the national grassland is treated as a “proposed” species, while the animals, from the population using the adjoining Badlands National Park is treated as a “threatened” species for Section 7 consultation under ESA. It is important to point out that no rodenticide use or prairie dog shooting is considered in any of the alternatives for colonies on the national grassland along the National Park boundary. Also, all of the alternatives maintain Conata Basin prairie dog populations and distribution on the national grassland above the minimum habitat threshold projected as needed for long-term persistence of the ferret population (Livieri and Perry 2005). Therefore, from a

habitat perspective the integrity of the greater Conata Basin/Badlands experimental black-footed ferret population should be maintained as well under all alternatives.

**Table 3-9. Biological determinations<sup>1</sup> for federally listed threatened and endangered species**

Species	Alternative 1			Alternative 2			Alternative 3		
	BGNG	FPNG	ONG	BGNG	FPNG	ONG	BGNG	FPNG	ONG
<b>Black-footed Ferret</b>	NLJ	NA	NA	NLJ	NA	NA	NLJ	NA	NA
<b>Bald Eagle</b>	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA
<b>Whooping Crane</b>	MA-NLAA	MA-NLAA	NA	MA-NLAA	MA-NLAA	NA	MA-NLAA	MA-NLAA	NA

<sup>1</sup> NLJ - Not likely to jeopardize continued existence

MA-NLAA - May affect, not likely to adversely affect

NA - Not applicable, species and/or suitable habitat does not occur.

The biological determinations for sensitive species are summarized in Table 3-10. Adverse biological determinations (LRLV) are highlighted in the table. Most of the biological determinations under Alternative 1 in Tables 3-9 and 3-10 are taken from the Biological Assessment and Evaluation for the revised LRMP (Appendix H in the LRMP FEIS), since Alternative 1 prescribes the prairie dog direction in the revised LRMP. The only new analyses for Alternative 1 in the DEIS are for the newly designated sensitive species.

Adverse biological determinations were limited to black-tailed prairie dog and western burrowing owl on the Fort Pierre and Oglala National Grasslands under Alternative 2. Under that alternative, prairie dog populations are extirpated or nearly extirpated on the two national grasslands, assuming that all colonies in the 1 mile boundary management zone are eventually treated with rodenticide. Burrowing owls are closely associated with prairie dogs and their colonies in the project area and use prairie dog burrows for nesting.

The biological determinations in Tables 3-9 and 3-10 do not consider the possibility of plague epizootics since plague has never been confirmed in the project area. However, the possibility of future plague in the prairie dog populations cannot be ruled out, and the Forest Service will coordinate with other state and federal agencies if plague eventually occurs in the project area.

Several of the sensitive bird species are granivorous and could be at some risk of primary poisoning if they ingested rodenticide bait (oats). To reduce primary poisoning risks to sensitive bird species, as well as other migratory landbirds, the LRMP provides direction that defers rodenticide applications until October 1 but before December 31. In this manner, most of the migratory birds have migrated out of the area and are not present during rodenticide applications. It's also important to point out that Tietjen (1976) found that when properly applied, zinc phosphide rodenticide bait (oats) do not pose significant hazards to non-target species, and he further reported that it was not necessary to exclude non-target species during rodenticide application. He further stated:

“...if prairie dog colonies are treated according to the final recommended bait-treatment standard for 2 percent zinc phosphide-treated steam-rolled oats, several factors should contribute to low primary and secondary hazards: (1) the food habits, preferences, and feeding patterns of the domestic and wild nontarget species; (2) the relatively low concentration of zinc phosphide in the bait; (3) the small amount of bait applied per unit area; (4) the widely scattered bait distribution pattern; and (5) the short time most of the bait is exposed. Taking these into consideration, we believe that the baiting treatment we recommend will present no significant hazards to nontarget species...”

This information, along with the delayed rodenticide application date specified in the LRMP, suggests that risks to non-target landbirds, as well as other wildlife species, are minimal where and when EPA label requirements for the application of zinc phosphide rodenticide are followed. His comments relate equally to other resident wildlife. His assessment of low primary and secondary risks to non-target birds is further supported by studies conducted in Conata Basin (Apa et al. 1991, Uresk et al. 1988). However, losses of non-target small mammals to zinc phosphide rodenticide may be more significant. Another study in Conata Basin documented short-term reductions in deer mice following zinc phosphide applications and suspected possible non-target losses of *Perognathus* spp. and *Dipodomys* spp. (Deisch et al. 1990).

**Table 3-10. Biological determinations<sup>1</sup> for sensitive species in the project area**

Species	Alternative 1			Alternative 2			Alternative 3		
	BGNG	FPNG	ONG	BGNG	FPNG	ONG	BGNG	FPNG	ONG
Black-tailed Prairie Dog	MAII	MAII	MAII	MAII	LRLV	LRLV	MAII	MAII	MAII
Swift Fox	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
Greater Prairie Chicken	NA	MAII	NA	NA	MAII	NA	NA	MAII	NA
Long-billed Curlew	NI	NI	NI	NI	NI	NI	NI	NI	NI
Greater Sage Grouse	NI	NA	NA	NI	NA	NA	NI	NA	NA
Northern Harrier	NI	NI	NI	NI	NI	NI	NI	NI	NI
Ferruginous Hawk	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
Chestnut-collared Longspur	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
McCown's Longspur	NA	NA	MAII	NA	NA	MAII	NA	NA	MAII
Western Burrowing	MAII	MAII	MAII	MAII	LRLV	LRLV	MAII	MAII	MAII



Species	Alternative 1			Alternative 2			Alternative 3		
	BGNG	FPNG	ONG	BGNG	FPNG	ONG	BGNG	FPNG	ONG
Owl									
Short-eared Owl	MAII	MAII	MAII	NI	NI	NI	NI	NI	NI
Mountain Plover	NI	NA	NA	NI	NA	NA	NI	NA	NA
Brewer's Sparrow	NI	NA	NI	NI	NA	NI	NI	NA	NI
Grasshopper Sparrow	MAII	MAII	MAII	NI	NI	NI	NI	NI	NI
Trumpeter Swan	MAII	NA	NA	MAII	NA	NA	MAII	NA	NA
Regal Fritillary	MAII	MAII	NA	NI	NI	NA	NI	NI	NA

<sup>1</sup> MAII – May adversely impact individuals but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide

NA – Not applicable

LRLV - Likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of species viability range-wide

NI - No impact

## 3.8 Management Indicator Species

### 3.8.1 Affected Environment

Management indicator species for rangeland and grassland habitats in the project area are black-tailed prairie dog, greater prairie chicken (*Tympanuchus cupido*), plains sharp-tailed grouse (*Tympanuchus phasianellus*), and greater sage grouse (*Centrocercus urophasianus*). The biological communities that they represent on the national grasslands and forests are presented in Table 3-11. Only those NFS lands that support black-tailed prairie dog populations are listed in the table, and maps of the six geographic areas identified in the table for the Buffalo Gap National Grassland are provided in Appendix A – Maps of this DEIS.

Habitat relationships for each indicator species are discussed in Appendix H of the LRMP. Prairie dogs prefer and maintain low structure grassland habitat while the others select for diverse high structure grassland habitats on mixed grass and sandhills prairie. Where prairie dogs expand uniformly over extensive grassland areas, habitat suitability for the other management indicator species decreases. The desired mix of grassland structure levels and resulting habitat conditions for management indicator species was addressed in Chapter 2 of the LRMP by establishing grassland structure objectives for each NFS unit and geographic area. The objectives specify the desired amounts of low, moderate and high grassland structure, recognizing low structure grasslands will extend beyond just prairie dog colonies.

Potential habitat for each management indicator species was assessed and mapped for each national grassland and forest as part of the LRMP revision process. The potential habitat information is summarized and presented in Tables 3-129, 130, 131, and 132 in the LRMP FEIS and addendum. Some modifications and refinements to the geographic information system model used to predict potential black-tailed prairie dog habitat in the LRMP FEIS were recently applied, but the changes in model outputs were minor. Also, a cooperative sagebrush aerial survey and mapping project with the South Dakota Department of Game, Fish and Parks was recently completed in the Fall River West Geographic Area. This project provided more accurate information than previous mapping projects on the distribution and amounts of sagebrush and potential sage grouse habitat. Approximately 15,800 acres of sagebrush habitat were listed in Table 3-131 of the LRMP FEIS, and the new survey indicates that the more accurate figure is approximately 14,560 acres.

Population and habitat objectives for each management indicator species are provided in Chapter 2 of the LRMP and are summarized here. Objectives for black-tailed prairie dogs vary between national grasslands and geographic areas. The objectives for black-tailed prairie dogs for Fort Pierre and Oglala National Grasslands are to increase prairie dog populations and habitat and to establish a colony complex on each area. The colony complexes are to meet specified criteria to help ensure long-term persistence of prairie dog populations in those areas. The criteria call for a minimum of 1,000 acres in 10 or more colonies with inter-colony distances not exceeding 6 miles and are based on information from Hanski 1997, Knowles 1985, Luce 2001, and Samson 2000. It is important to point out that the LRMP specifies that colonies on adjoining lands protected under conservation agreements or easements can be counted as part of each complex. In Conata Basin (Wall Southwest Geographic Area), the objective is to increase prairie dog populations and habitat and to maintain the colony complexes already established in the Basin.

**Table 3-11. Management indicator species**

Area	Biological Community	Management Indicator Species
<b>Buffalo Gap N.G.</b>		
Fall River Northeast G.A.	Diverse high structure grasslands	Plains sharp-tailed grouse
Fall River Southeast G.A.	Diverse high structure grasslands Prairie dog colonies and low structure grasslands	Plains sharp-tailed grouse Black-tailed prairie dog
Fall River West G.A.	Sagebrush with tall, dense and diverse understories Prairie dog colonies and low structure grasslands	Greater sage grouse Black-tailed prairie dog
Wall North G.A.	Diverse high structure grasslands	Plains sharp-tailed grouse
Wall Southeast G.A.	Diverse high structure grasslands	Plains sharp-tailed grouse
Wall Southwest G.A.	Prairie dog colonies and low structure grasslands	Black-tailed prairie dog
<b>Fort Pierre N.G.</b>		
	Diverse high structure grasslands	Plains sharp-tailed grouse
	Diverse high structure grasslands	Greater prairie chicken
	Prairie dog colonies and low structure	Black-tailed prairie dog



Area	Biological Community	Management Indicator Species
	grasslands	
Oglala N.G.	Diverse high structure grasslands Prairie dog colonies and low structure grasslands	Plains sharp-tailed grouse Black-tailed prairie dog
Nebraska N.F. (Bessey Ranger District)	Diverse high structure grasslands Diverse high structure grasslands	Plains sharp-tailed grouse Greater prairie chicken

Management objectives for plains sharp-tailed grouse and greater prairie chicken are to provide diverse and quality habitats to help support stable to increasing populations. The objectives further specify that this will be accomplished by meeting, in a timely manner, the objectives for high grassland structure prescribed in the LRMP.

Objectives for greater sage grouse in the Fall River West Geographic Area are similar to those for sharp-tailed grouse and greater prairie chicken. However, there have been no sightings over the last couple years of the small flock that has traditionally used the national grassland in this area. Only one sage grouse display ground is known to have been active in the area over the last couple decades, and in the spring of 2003 and 2004, the display ground was not used. The abandonment of this display ground coincided with arrival of West Nile virus in this area. This population may have moved or may have simply been a victim of small population biology and possible disease.

Current habitat suitability for each management indicator species, except greater sage grouse, is presented in Tables 3-129, 130 and 132 in the LRMP FEIS and addendum. Recent monitoring suggests that these levels of habitat suitability have not appreciably changed (USDA Forest Service 2004). The recent cooperative sagebrush and sage grouse habitat project in the Fall River West Geographic Area provided information to further assess habitat suitability for greater sage grouse. Of the 14,060 acres of sagebrush habitat, approximately 19 percent consists of moderate to high density sagebrush that provides higher levels of suitability for nesting, brooding and wintering.

### 3.8.2 Environmental Consequences

Direct and indirect effects on management indicator species of implementing Alternatives 2 and 3 are evaluated based on the likelihood of achieving the objectives for long-term population trends and habitats by 2012. The effects of implementing Alternative 1 have already been evaluated as part of the recent LRMP revision process but are included and presented in this analysis for comparative purposes.

Direct effects on the black-tailed prairie dog as a management indicator species are the result of the use of prairie dog rodenticide and to a lesser extent, regulated prairie dog shooting in Conata Basin. Indirect effects generally relate to the use of non-lethal methods to modify habitat suitability for black-tailed prairie dogs, but these activities were already analyzed in the revised LRMP.

Direct effects on the other management indicator species are the risk of rodenticide ingestion and primary poisoning. Indirect effects are the result of changes in habitat suitability (grassland vegetation structure) following increases or decreases in prairie dog populations. Under Alternative 1, the desired levels of low structure for each geographic



area where the plains sharp-tailed grouse, greater prairie chicken, and sage grouse are management indicator species, exceed the predicted 2012 prairie dog colony acreages. Therefore, the predicted future prairie dog colony expansion under Alternatives 1 and 3 is not expected to detract from attainment of the population and habitat objectives for the other management indicator species. Management of livestock grazing is the primary factor influencing the likelihood of attaining long-term objectives for the other management indicator species.

**Black-tailed Prairie Dog.** Colony acreages and estimated prairie dog populations in the geographic areas where the black-tailed prairie dog is a management indicator species are presented in Table 3-12. The base years used for comparison purposes in the table are 1996-97, the survey information used in the LRMP FEIS analyses. The estimated prairie dog populations in the table are based on the range of prairie dog densities found across colonies in Conata Basin (Livieri and Perry 2005). The prairie dog densities range from a low of 6 prairie dogs per acre to a high of 15 per acre. As demonstrated in the table, comparisons of the 1996-97 colony acreages with the predicted acreages for 2012 indicate upward prairie dog population trends under Alternatives 1 and 3 in each of the national grasslands and geographic areas. Alternative 2 results in upward trends on the Buffalo Gap National Grassland geographic areas and negative trends in colony acreage on the Fort Pierre and Oglala National Grasslands (geographic areas). Under Alternative 2, the prairie dog population on Fort Pierre National Grassland is essentially extirpated, assuming all the prairie dog colonies in the boundary management zone are eventually treated with rodenticide. If extirpation occurred on the national grassland under Alternative 2, the distribution of prairie dog colonies on NFS lands in the project area would be substantially reduced.

The population trend analysis in the preceding paragraph uses changes in colony acreage as an indicator of population trend. When comparing the population estimates, rather than the colony acreages, from the 1996-97 baseline information to the predicted populations in 2012, Alternative 1 clearly indicates positive population trends in all areas. The population trends on the Oglala and Fort Pierre National Grasslands under Alternative 2 are obviously down. However, under Alternative 2 the ranges for the 1996-97 baseline populations and the predicted 2012 populations overlap for the Buffalo Gap National Grassland geographic areas all areas. If midpoints of the ranges are compared for Alternative 2, upward population trends are indicated for each of the geographic areas on the Buffalo Gap National Grassland, as did the comparison of colony acreages (preceding paragraph). Under Alternative 3, the predicted population ranges for the Wall Southwest Geographic Area and the Fort Pierre and Oglala National Grasslands overlap with the respective 1996-97 ranges, but again, if the midpoints of the ranges are compared, upward population trends are indicated. The population ranges for the other geographic areas on the Buffalo Gap National Grassland clearly indicate an upward population trend.

Current and predicted colony acreages in each of the colony complex areas prescribed in the LRMP for Fort Pierre and Oglala National Grasslands are presented in Table 3-13. A colony complex meeting and exceeding the minimum criteria already exists on the Oglala National Grassland and would be retained and expanded under Alternatives 1 and 3. Attainment of a colony complex meeting the specified criteria on the Fort Pierre

National Grassland by 2012 under Alternative 1 could be attained by 2012 but under Alternative 3, some additions to the complex in the form of colonies on adjoining lands under conservation agreements or easements would certainly help meet the criteria in a more timely manner. Otherwise, a few more years beyond 2012 of colony expansion on the national grassland would be needed to eventually attain the minimum criteria. Attainment of the colony complexes on the Oglala and Fort Pierre National Grasslands is not feasible under Alternative 2, assuming that all or most of the prairie dog colonies in the boundary management zones are eventually treated with rodenticide.

**Greater Prairie Chicken.** Black-tailed prairie dogs and greater prairie chicken both occur on the Fort Pierre National Grassland. As prairie dogs expand, increases in low grassland structure and corresponding decreases in moderate and high structure would be expected, thus reducing overall habitat suitability for greater prairie chicken. However, under Alternatives 2 and 3, prairie dog colony acreages decrease or remain similar over the next several years and therefore do not detract from attainment of greater prairie chicken population or habitat objectives (Table 3-12). The long-term population trend for greater prairie chicken on the Fort Pierre National Grassland is clearly upward (Moravek 2004).

**Plains Sharp-tailed Grouse.** Black-tailed prairie dogs occur in all the geographic areas where the plains sharp-tailed grouse is identified as a management indicator species. Under Alternatives 2 and 3, prairie dog colony acreages decrease or remain similar over the next several years and therefore do not detract from attainment of sharp-tailed grouse population or habitat objectives in any of the geographic areas where it is a management indicator species (Table 3-12). The long-term population trend for sharp-tailed grouse on the Fort Pierre National Grassland is stable to slightly upward (Moravek 2004). However, current data are insufficient to assess long-term population trend of this species on the Oglala National Grassland, but a systematic monitoring protocol is being developed and will be implemented beginning in the spring of 2006. This protocol will allow sharp-tailed grouse populations monitored and trends to be determined. Similar protocols are also being developed for the Buffalo Gap National Grassland. Limited data for the Wall Southeast and North Geographic Areas show an upward trend from 1985 through 1999 but then plummets from 2000 to 2004 (South Dakota Department of Game, Fish and Parks, unpublished data). This is likely the result of drought conditions during that period.

**Greater Sage Grouse.** Black-tailed prairie dogs occur in the Fall River West Geographic Area where the greater sage grouse is identified as a management indicator species (Table 3-11). There is one colony located close to the traditional sage grouse display ground, but it has essentially remained the same size for the last 15 or more years, as indicated in the Biological Assessment and Evaluation (Appendix E). This colony is bordered by sagebrush and has not been treated with rodenticide. Although black-tailed prairie dogs have been observed and reported to gradually remove sagebrush from the periphery of colonies, this has not been observed at this site. It appears that other factors resulted in the loss or movement of the sage grouse population from this area. It is highly unlikely that implementation of Alternatives 2 and 3 would have any significant effects on sagebrush habitat in this area over the next several years or on potential sage grouse populations that could eventually re-establish in the area.



Table 3-12. Active colony acres and estimated prairie dog population (in thousands) <sup>1</sup>

	LRMP FEIS (1996-97) <sup>2</sup>	Alternative 1 Current (2004)	Alternative 1 Predicted (2012) <sup>3</sup>	Alternative 2 Current (2004)	Alternative 2 Predicted (2012) <sup>3</sup>	Alternative 3 Current (2004)	Alternative 3 Predicted (2012) <sup>3</sup>
<b>Buffalo Gap N.G.</b>							
Fall River Southeast G.A.	490 (2.9 to 7.3)	2,160 (13.0 to 32.4)	4,700 to 9,500 (28.2 to 142.5)	720 (4.3 to 10.8)	900 to 1,100 (5.4 to 16.5)	1,180 (7.1 to 17.7)	1,800 to 2,500 (10.8 to 37.5)
Fall River West G.A.	240 (1.4 to 3.6)	600 (3.6 to 9.0)	900 to 1,800 (5.4 to 27.0)	260 (1.6 to 3.9)	300 to 400 (1.8 to 6.0)	470 (2.8 to 7.0)	600 to 800 (3.6 to 12.0)
Wall Southwest G.A.	11,940 (71.6 to 179.1)	20,180 (121.1 to 302.7)	30,000 to 62,000 (180.0 to 930.0)	14,960 (89.8 to 224.4)	16,500 to 19,900 (99.0 to 298.5)	19,060 (114.4 to 285.9)	22,700 to 32,000 (136.2 to 480.0)
<b>Fort Pierre N.G. / G.A.</b>	720 (4.3 to 10.8)	1,260 (7.6 to 18.9)	2,100 to 3,300 (12.6 to 49.5)	0 (0)	0 (0)	870 (5.2 to 13.0)	1,200 to 1,500 (7.2 to 22.5)
<b>Oglala N.G. / G.A.</b>	740 (4.4 to 11.1)	2,220 (13.3 to 33.3)	3,600 to 9,000 (21.6 to 135)	80 (0.5 to 1.2)	<100 (<1.5)	1,170 (7.0 to 17.6)	1,400 to 2,000 (8.4 to 30.0)

<sup>1</sup> Table displays only geographic areas where black-tailed prairie dogs are a management indicator species.

<sup>2</sup> Analyses in the LRMP FEIS used 1996-97 prairie dog colony survey information

<sup>3</sup> Lower end of each range for colony acreage is predicted if precipitation patterns tend to be normal or above normal over the next several years, while the upper end of the range is predicted if extended dry conditions prevail



**Table 3-13. Current and predicted colony complexes on Fort Pierre and Oglala National Grasslands**

	Alternative 1	Alternative 2	Alternative 3
<b>Fort Pierre N.G.</b>			
Current NFS Complex	770 acres 11 colonies	0	550 acres 10 colonies
Predicted NFS Complex (2012)	1,100 to 1,700 acres >11 colonies	0	700 to 900 acres > 11 colonies
<b>Oglala N.G.</b>			
Current NFS Complex	2,220 acres 26 colonies	80 acres >1colony	1,170 acres >10 colonies
Predicted NFS Complex (2012)	3,300 to 6,800 acres >26 colonies	<100 acres >2 colonies	1,400 to 1,800 acres >10 colonies

## 3.9 Recreation Resources

### 3.9.1 Affected Environment

Recreation associated with prairie dog colonies consists mostly of wildlife viewing and recreational prairie dog shooting. For purposes of this analysis, opportunities for viewing wildlife commonly found on prairie dog colonies are assumed to be proportional to the acreage of active prairie dog colonies.

Forest Service shares responsibilities with state agencies for management of wildlife on national forests and grasslands. In terms of recreational prairie dog shooting, the Forest Service (Nebraska National Forest) has issued prairie dog shooting restrictions and prohibitions in designated black-footed ferret habitat on the Buffalo Gap National Grassland. However, elsewhere on the national grasslands and forests in the project area, with the exception of administrative sites, Forest Service defers to the states for decisions relating to prairie dog shooting restrictions, prohibitions and regulations. Interagency coordination and consultation between the Forest Service and state agencies on proposed prairie dog shooting restrictions and regulations affecting NFS lands is critically important, regardless of the lead agency.

More information on these activities is presented in Chapter 3 of the LRMP FEIS.

### 3.9.2 Environmental Consequences

Quantitative data on the number of recreation visitor days associated with wildlife viewing on prairie dog colonies in the project area are not available. Instead, it was assumed that prairie dog viewing opportunities on the national grasslands and forests were proportional to predicted increases or decreases in total colony acreage by 2012. Direct effects of alternatives on wildlife viewing opportunities associated with prairie dog colonies were determined by simply comparing current and predicted (2012) prairie dog colony acreages under each alternative. The predicted acreages of active prairie dog colonies by 2012 under each alternative are presented in Table 3-2. Under Alternatives 1 and 3, wildlife viewing opportunities associated with prairie dog colonies would increase by approximately 161 and

20 percent by 2012, respectively. Under Alternatives 2, viewing opportunities would decrease by approximately 33 percent. These percentages are based on comparisons of the midpoints of the predicted colony acreage ranges presented in Table 3-2.

Forest Service is not proposing any additional prairie dog shooting restrictions under any alternative. Under Alternatives 2 and 3, the Forest Service is considering modifying its existing prairie dog shooting prohibition in Conata Basin by allowing some regulated prairie dog shooting in selected colonies along the outer boundaries of the black-footed ferret habitat area to help reduce unwanted colonization on adjoining lands. It is anticipated that the amount of prairie dog shooting in Conata Basin would be very limited and its effects on recreational opportunity insignificant. Therefore, no further analysis or discussion on recreational prairie dog shooting is presented.

It is recognized that recreational prairie dog shooting and wildlife viewing on prairie dog colonies can be conflicting activities. Because prairie dog shooting opportunity is not expected to change significantly under any alternative, no analysis of the relationship between these two activities was conducted.

### **3.10 Social & Economic Factors**

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#### **3.10.1 Economic Affected Environment**

A detailed economic effects analysis is documented in the LRMP FEIS (pages 3-5 through 3-61). None of the alternatives change the determinations made in the LRMP FEIS economic affected environment.

#### **3.10.2 Economic Environmental Consequences**

A long-standing issue associated with prairie dog conservation and management has been concern over the effects of prairie dogs on the economic well-being of local agricultural families and communities. The relevance of that issue was reinforced in comments received in response to the recent Notice of Intent for this DEIS.

Overall, the national grasslands and forests play a minor role in the total livestock production in the project area. Livestock production from national grasslands and forests is very important to local agricultural families who live adjacent to the national grasslands and forests. The local ranchers with grazing permits on the federal lands have an interdependent relationship with the national grasslands and forests. Therefore, any increase or decrease in forage provided by public lands may cause adjustments in herd sizes or other factors related to permittee's livestock operations. The primary factor within the project area dictating changes in forage availability is the recurring drought periods that are a normal occurrence in the Northern Great Plains. The primary factor causing temporary adjustments in permitted grazing will continue to be the recurring drought periods in the project area. Any long-term or permanent adjustments in permitted livestock grazing will be addressed in the range allotment management planning process.

Livestock grazing, hay and crop production are primary land uses on the private and tribal lands adjoining the national grasslands and forests. The alternatives considered in this



project focus on the concerns of adjoining landowners and producers concerning movement of prairie dogs from the national grasslands and unwanted colonization of their lands.

Economic dependency and diversity are important features of local economies that can assist managers in measuring and assessing the effects of land and resource management decisions on the affected communities.

**Economic Dependency.** Economic dependency refers the extent a local economy depends on a limited number of industries. The larger a single industry's role is in the economy, the more dependent the economy is on that industry.

Economic dependency is estimated by determining the approximate percentage of the total economy of each county that can be attributed to a particular industry. Of special interest in this analysis are those industries that can be affected by each of the three alternatives. In this case, the primary effects are limited to agriculture. Numerous counties in the project area are dependent on livestock production for more than 10 percent of their total employment (USDA Forest Service 2001). These counties include Jackson, Fall River, Jones, Lyman, Stanley Counties in South Dakota, and Dawes and Sioux Counties in Nebraska. However, only a fraction of the livestock grazing within these counties occurs on national grasslands and forest. Other industries in the area are either unaffected or the potential effects are insignificant.

**Economic Diversity.** Economic diversity is a measure of how much variety there is in a particular economy and is closely related to economic dependency. It is believed that diverse economies are more resilient to external impacts than less diverse economies. A relatively diverse economy would not be dependent on just one or a few industries.

County economic diversity has been measured by an index, called the Shannon-Weaver Entropy Index, and includes all the different economic sectors within those counties. The resulting diversity indices are a function of the number of economic sectors in a county economy and the distribution of employment across those sectors. Usually the larger and more diverse the economy, the larger the index. The index varies between 0 and 1, with higher numbers indicating greater diversity. The Shannon-Weaver Index for the planning units range between 0.5277 and 0.6488. These index numbers indicate that the economic diversity from 1982 -1996 remains in an upward trend (LRMP FEIS).

None of the alternatives would have a significant influence on the economic dependency and diversity of local communities in the project area.

### **3.10.3 Social Effectuated Environment**

A detailed social effects analysis is documented in the LRMP FEIS (pages 3-61 through 3-76). None of the alternatives change the determinations made in the LRMP FEIS social effectuated environment.

### **3.10.4 Social Environmental Consequences**

**General Effects.** No alternative is expected to have a substantial effect on the demographic trends within the project area. Communities that are in decline or are growing would continue to decline or grow independent of the alternatives. The primary factor determining



the economic health of many communities would be the market price for livestock, oil, gas, and coal, which is outside the span of control of the communities and the Forest Service in the project area.

This section addresses the primary public user/interest groups involved in prairie dog conservation and management on the national grasslands and provides a summary of the effectiveness of the alternatives in responding to the primary preferences, interests and concerns of each major public user/interest group.

**Adjacent landowners.** This group includes adjoining landowners who are mostly agricultural producers. Their primary interests relate to the effects of the alternatives on adjoining agricultural lands. Approximately 150 to 200 landowners in the project area could potentially express concerns about unwanted prairie dog colonization of their agricultural lands that adjoin national grasslands. In some cases, the colonies likely originate from national grasslands, but, at other locations, the colonies appear to have started on the private or tribal lands. Alternatives 2 and 3, with their full suite of management tools, would substantially decrease unwanted prairie dog colonization of private and tribal lands. As a result, Alternatives 2 and 3 provide the most effective response to adjoining landowners while Alternative 1 provides the least effective response.

In addition, approximately 20 rural residences and associated facilities occur in or near prairie dog colonies that also extend onto national grasslands. Prairie dog colonies in close proximity to their residences and outbuildings raised health and safety concerns relative to diseases, rattlesnakes and black widow spiders as well as prairie dog shooting. All alternatives address the health and safety issue, although Alternatives 2 and 3 implement a boundary management zone that provides additional safeguards.

**Agricultural Producers.** This group includes grazing permittees that have interests related to stable grazing levels on their permitted grazing use. Grazing levels will fluctuate based on annual weather patterns and other factors as has occurred in the past. It is documented that the accelerated expansion of prairie dog colonies occurs during drought periods and is further accelerated by the failure to adjust livestock use during drought. These fluctuations will continue in the future under all alternatives, but would be highest under Alternative 1 due to the inability to utilize a full suite of management tools.

**American Indian Community.** All alternatives recognize the rights of American Indians within the project area. In general, American Indian communities have expressed concern that national grasslands are contributing to unwanted prairie dog impacts on adjoining tribal lands. Their primary interests are the economic impacts on the Pine Ridge Indian Reservation and Lower Brule Indian Reservation. Alternative 2 and 3 would reduce impacts from prairie dogs to adjacent tribal agricultural lands through the use of a full suite of management tools. Alternative 1 would have some impacts on tribal agricultural lands.

**Government.** This group is made up of representatives and elected officials from a variety of local, state, and federal agencies and offices. Management preferences vary depending on agency mission or the views of each entity's constituency. Some of the more prevalent interests across this group are: the continued availability of natural resources and opportunities; diverse vegetation, recreation opportunities, wildlife habitat; and stable economic conditions/lifestyles.

Alternative 1 would have some impact on forage available to livestock and would require some shift in resource uses. Alternatives 2 and 3 would have minor impact on forage available for livestock and could cause some minor shifts in resource uses. Alternative 1 would provide the most diverse vegetation and wildlife habitat. Alternative 3 would rank second in a comparison with Alternative 2. Alternative 1 may have some minor impacts causing some economic and social adjustments. Alternative 2 and 3 would most likely maintain the current economic and social conditions.

**Conservationist/Preservationists/Environmentalists.** This group includes conservation, preservation, and environmental organizations and advocates. Primary management preferences include black-footed ferret recovery, biological diversity, protection of unique wildlife habitat, and animal welfare. Alternative 1 would provide the most acres of prairie dog colonies for black-footed ferret recovery, followed by Alternative 3. Alternative 1 would provide more biological diversity and more unique wildlife habitat, followed by Alternative 3. Alternative 1 would have the least impact to animal welfare due to its emphasis on non-lethal tools.

## **3.11 Oil and Gas Resources**

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### **3.11.1 Affected Environment**

Approximately 187,390 acres of the Buffalo Gap and Oglala National Grasslands are administratively available for oil and gas leasing. There's currently 14 operating oil and gas wells on the Buffalo Gap National Grassland, and it is estimated that there is a potential for a total of approximately 85 oil and gas wells in these areas. Currently, there are approximately 2,800 acres of prairie dog colonies within the available lease area. Although unlikely, most or all of these areas could be stipulated (no surface occupancy) based on known locations of burrowing owl nests. There's also other prairie dog management direction in the LRMP that could affect oil and gas development. This includes a standard in the LRMP prohibiting activities that would alter water flow regimes and flood prairie dog burrows and a guideline that limits road construction in prairie dog colonies.

### **3.11.2 Environmental Consequences**

The predicted direct and indirect effects on oil and gas resources are based on land area available for lease. No surface occupancy stipulations would be applied to known locations of burrowing owl nests in prairie dog colonies. Under Alternative 1, approximately 2,800 acres could be stipulated based on the current distribution and acreage of prairie dog colonies. Under Alternatives 2 and 3, the acres of land potentially stipulated for burrowing owl nests would decrease by 88 and 74 percent, respectively. These same reduction levels would apply to potential limitations on oil and gas development from the standard and guideline limiting new road construction and water discharge (flooding) in prairie dog colonies.



### **3.12 Short-term Uses and Long-term Productivity** \_\_\_\_\_

The proposed action could result in annual adjustments in permitted livestock grazing on the national grasslands during droughts to help regulate prairie dog populations and dispersal during drought periods through vegetation management. Also, public use of affected areas may be disrupted during rodenticide applications. All areas where rodenticides are applied would be posted with restricted use pesticide advisory signs, and although public use of affected areas is not prohibited, the signing may discourage some recreation use during the 1 to 2 week period when the areas are posted.

### **3.13 Irreversible and Irretrievable Commitments of Resources** \_\_\_\_

There are no irreversible and irretrievable commitments of resources as a result of implementation of any alternative. Special consideration is given in all alternatives to meeting and exceeding minimum black-footed ferret habitat thresholds on the Buffalo Gap National Grassland in Conata Basin. This would help ensure a high level of probability for long-term persistence of the nonessential experimental ferret population.

### **3.14 Cumulative Effects** \_\_\_\_\_

Drought results in reduced annual plant productivity and accelerated expansion and establishment of prairie dog colonies. The combined and cumulative effects of the 2004 drought and related prairie dog colony expansion on livestock forage and crops have elevated rancher and farmer concerns over prairie dogs in the project area. The long-term depressed farm and ranch economy is also contributing to the increased attention being focused on prairie dogs by landowners and agricultural producers. These are major factors contributing to the increased complaints from landowners about prairie dog colony encroachment from national grasslands. These complaints and interest in prairie dog population reductions by landowners can be expected to continue and may increase if extreme drought conditions continue.

Past and future rodenticide programs on other land jurisdictions add to the effects of the proposed action on prairie dog populations and colony distribution in the vicinity of the project area. For example, approximately 24,250 acres of colonies were reported as treated with rodenticide on private land in the vicinity of the Buffalo Gap National Grassland in 2004 (South Dakota 2005). This was in addition to 6,780 acres that were treated with prairie dog rodenticide on the national grassland in 2004. During the 1970s and 1980s, over 85 percent of the prairie dog colony acreage on the national grassland was treated with rodenticide (USDA Forest Service 1981). At about the same time, approximately 458,618 acres of colonies on the nearby Pine Ridge Indian Reservation were treated with rodenticide (U.S. Fish and Wildlife Service 2004). Approximately 240,000 acres were re-treated from 1985 through 1986. In regards to future prairie dog rodenticide programs, the Rosebud and Cheyenne River Sioux Tribes recently purchased enough rodenticide to control 16,000 acres of black-tailed prairie dog colonies (Diane Mann-Klager, personal communication). These acreages total approximately 40,000 acres, about 10 percent of the current statewide colony acreage of 412,000 acres. Also, the Bureau of Indian Affairs is currently considering rodenticide programs to curb rapidly expanding colonies on reservations in South Dakota (U.S. Fish and Wildlife Service 2004). These reservations support some of the last



remaining large complexes (greater than 10,000 acres) of prairie dog colonies that have not experienced plague. The suggested intent of these proposed efforts is to reduce prairie dog populations, primarily where they encroach on private lands but to allow core areas that are suitable for potential ferret reintroduction efforts to remain intact. This approach is considerably different than historic attempts to completely extirpate prairie dog populations. This approach would also be less injurious and more supportive of the national recovery program for the black-footed ferret.

At a state-wide scale, the Animal and Plant Health Inspection Service (APHIS) has limited information regarding sales of prairie dog rodenticides by their own agency and the State of South Dakota (U.S. Fish and Wildlife Service 2004). Their rodenticide sales information provides only a partial picture of prairie dog rodenticide activities in the region. The South Dakota Department of Agriculture sold approximately 27,000 pounds of zinc phosphide rodenticide in South Dakota and Nebraska in 2000, 43,000 pounds in 2001, 98,000 pounds in 2002, and 135,000 pounds in 2003. At least 16,189 pounds of zinc phosphide rodenticide were purchased from South Dakota and applied in Nebraska in 2002. The above numbers may indicate the potential for impacts to black-tailed prairie dog populations at a statewide scale. If all of the rodenticide purchased in 2003 was applied within the year of purchase at the recommended application rate, approximately 405,000 acres could have been treated that year in South Dakota and Nebraska. The estimated acreage of prairie dog colonies in Nebraska and South Dakota in 2003 was approximately 549,000 acres.

Plague is not known to occur on any prairie dog colonies within the project area, but the potential for plague to occur in the project area cannot be discounted. Plague was confirmed in a prairie dog colony in western Custer County, South Dakota, in September, 2004 near the border of Wyoming and South Dakota. Prairie dogs are highly susceptible to plague, and it is considered to be a serious threat to the persistence of local prairie dog populations (USDA Forest Service 2001). A plague epizootic in the project area would add significant cumulative effects by eliminating large colonies and creating a prairie dog colony landscape with much smaller colonies than exist today.

Plague is a major factor currently influencing black-tailed prairie dog populations and distribution across the range of the species. However, recent information indicates that prairie dog populations are not as vulnerable to the disease as previously thought (U.S. Fish and Wildlife Service 2004). Recent data suggests, in some portions of its range, prairie dog populations affected by plague can recover to near pre-plague population levels within a few years. For example, a 1995 survey across a portion of the Comanche National Grassland indicated approximately 4,500 acres of active prairie dog colonies. A year later in 1996, all of the colonies inspected had experienced total or near total extirpation as a result of a plague epizootic. By 2004, most of the prairie dog populations in these colonies had recovered.

Another major factor effecting local and regional prairie dog populations is the conversion of prairie and rangeland to cropland and other uses. The extent of this conversion across the Great Plains is displayed in information presented by Sieg et al. (1999). This information suggests that in the vicinity of the project area, 40 to 60 percent of the rangeland in some areas has been converted to other uses. Although approximately 14.7 million acres of cropland have been enrolled in the conservation reserve program (CRP) on the northern plains (Natural Resources Conservation Service 1996), few of these areas provide suitable habitat for black-tailed prairie dogs.

Rodenticide programs, plague and loss of native rangelands to other uses are major factors influencing range-wide prairie dog populations across multiple land jurisdictions. In the vicinity of the project area, rodenticide and rangeland conversion appear to be the major impacts. Other wildlife species that are closely associated with prairie dog colonies, including black-footed ferret, western burrowing owl, and mountain plover, are similarly effected by local and landscape scale changes in the abundance and distribution of prairie dog populations and their colonies.

### 3.15 Other Required Disclosures

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National Environmental Policy Act regulations (40 CFR 1502.25a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with ...other environmental review laws and executive orders.”

Forest Service has consulted with the following agencies to ensure compliance with other laws:

- Nebraska and South Dakota State Historical Officers, in accordance with the National Historic Preservation Act (E.O. 11593) for ground disturbing actions in historical places;
- U.S. Fish and Wildlife Service in accordance with ESA implementing regulations for projects with threatened or endangered species;
- Environmental Protection Agency in accordance with the National Environmental Policy Act, 42 U.S.C. 4231, Council on Environmental Quality (CEQ) regulations 40 C.F.R. Parts 1500-1508, and Section 309 of the Clean Air Act (CAA).

**Executive Order 12898, Environmental Justice.** Executive Order 12898 directs each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

There is no evidence that the effects attributable to prairie dog movement on federal lands, or the actions outlined in these alternatives, are disproportionately high or adverse on minority populations and low-income populations when compared with the effects upon non-minority or non-low-income populations. A detailed effects analysis can be found in the project record.

**Executive Order 11990, Protection of Wetlands.** Executive Order 11990 directs agencies to avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Known major wetland areas (as defined in Sec 6., (c)), have been protected or managed specifically for the protection of wetland resources in past management strategies. There is no evidence that the effects attributable to prairie dog management on national grasslands or the actions outlined in any alternative, would impact wetlands.

**Executive Order 11988, Floodplain Management.** Executive Order 11988 directs agencies to avoid to the extent possible the long and short-term adverse impacts associated with the

occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. This proposed action or the activities prescribed in any alternative do not modify or develop floodplains.



## CHAPTER 4. LISTS: INCLUDING LIST OF PREPARERS AND DOCUMENT RECIPIENTS

### 4.1 Contributors

The following people were contributors in the preparation of this draft environmental impact statement:

INTERDISCIPLINARY (ID) TEAM MEMBERS:		
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<b>Beasely, Barb</b> Paleontologist	Education: B.S. GeoSciences with concentration in Geology - University of Tennessee; M.S. Earth Sciences with concentration in Vertebrate Paleontology – Ft. Hays State	Professional Experience: 15 years, currently Paleontologist for the U.S. Forest Service; Prior experience in paleontology with Bureau of Land Management and South Dakota School of Mines and Technology.
<b>Bruch, Mieke</b> Rangeland Management Specialist	Education: B.S. Range Management, University of Nebraska - Lincoln	Professional Experience: 7 years experience including rangeland management with Bureau of Land Management (Colorado), and the Black Hills National Forest.
<b>Emly, Virginia</b> GIS Coordinator	Education: B.S. Animal and Range Science - South Dakota State University  M.S. Animal and Range Science/Botany North Dakota State University.	Professional Experience: 18 years, currently GIS Coordinator for Nebraska National Forest. Prior interdisciplinary natural resource experience with Forest Service and South Dakota State University.
<b>Erk, Mike</b> Supervisory Rangeland Management Specialist	Education: B.S. Range Science, South Dakota State University	Professional Experience: 27 years as a Rangeland Specialist, Black Hills and Nebraska National Forest.

<b>INTERDISCIPLINARY (ID) TEAM MEMBERS:</b>		
<b>Hicks, Keri</b> Archeologist	Education: B.A. Archaeological Studies, University of Texas at Austin, M.A. Anthropology (emphasis in Archaeology), University of Colorado at Boulder.	Professional Experience: 11 years experience, including Heritage Program Manager on Nebraska National Forest; Prior experience with Forest Service, universities and contracting firms.
<b>Hodorff, Robert</b> Range/Wildlife Biologist	Education: B.S., Biology, Moorhead State University MS, Wildlife & Fisheries Science, South Dakota State University	Professional Experience: 26 years, currently wildlife biologist, Fall River Ranger District; Prior wildlife management and research experience with Forest Service Northern Great Plains Research, Rapid City, SD and Laramie, WY.
<b>Kaczor, Nick</b> Biological Technician (GIS Support)	Education: B. S. Environmental Biology, Chadron State College	Professional Experience: 1 year, currently wildlife technician, Nebraska National Forest; Prior wildlife experience with Nebraska game and Parks Commission.
<b>Moravek, Glenn</b> Wildlife Biologist	Education: B.S., Fisheries and Wildlife Biology, Iowa State University	Professional Experience: 24 years as a biologist on FS ranger districts in South Dakota and Nebraska; Prior experience with U.S. Forest Service and U.S. Fish and Wildlife Service in Colorado, and with the Iowa Conservation Commission.
<b>O'Dea, William</b> Cartographic Technician	Education: B.A. Agri-Business, Chadron State College	Professional Experience: 3 years, Cartographic Technician, Nebraska National Forest.
<b>O'Rourke, Lora</b> Rangeland Management Specialist	Education: B.S. Range Science, Utah State University	Professional Experience: 20 years as a range conservationist; with the Nebraska National Forest since 1989. Prior range experience with the Bureau of Land Management and two years in Nigeria, West Africa.
<b>Perry, William</b> <b>Project Leader</b> District Ranger	Education: B.S. Wildlife/Range Science, New Mexico State University	Professional Experience: 27 years, currently District Ranger on the Buffalo Gap NG; Prior experience with Forest Service, Range/Wildlife Staff on Nebraska, Ashley, Uinta, and Manti/LaSal National Forests.

<b>INTERDISCIPLINARY (ID) TEAM MEMBERS:</b>		
<b>Sargent, Doug</b> Wildlife Biologist	Education: B.S., Biology, Black Hills State University; M.S., Biology, South Dakota State University	Professional Experience: 11 years, including wildlife biologist on the Bessey and Wall Ranger Districts of the Nebraska National Forest.
<b>Schenbeck, Greg</b> <b>Team Leader</b> Certified Wildlife Biologist	Education: B.S., M.S. Wildlife Biology, Colorado State University	Professional Experience: 31 years, currently Fish and Wildlife Program Manager, Nebraska National Forest. Other fish and wildlife experience with African Wildlife Foundation, Rachelwood Wildlife Research Foundation, Bureau of Land Management, Colorado Division of Wildlife, and Nebraska Game and Parks Commission
<b>Schumacher, Jerry</b> Public Affairs Specialist	Education: B.A. Social Sciences, Chadron State College	Professional Experience: 17 years, currently Public Affairs Specialist, Nebraska National Forest, 11 years NEPA and Appeals coordinator, Nebraska National Forest.
<b>Sidle, John</b> Northern Great Plains TES Coordinator and Certified Wildlife Biologist	Education: B.S. Wildlife Biology and M.S. Wildlife Ecology from Oregon State University and University of Minnesota, respectively	Professional Experience: 28 years, including 8 years as threatened, endangered and sensitive species coordinator for national grasslands. Prior wildlife conservation experience with Peace Corps, multi-lateral banks, and U.S. Fish and Wildlife Service experience in national wildlife refuge management, ecological services, and matters pertaining to the Endangered Species Act.
<b>Weisbeck, Tonya</b> Rangeland Management Specialist	Education: B.S. Environmental Management, South Dakota State University; B.S. Biology (minor in Chemistry), University of Nevada, Las Vegas	Professional Experience: 7 years experience including Interdisciplinary Range/Wildlife, US Forest Service, Nebraska National Forest (Pierre and Wall, SD); Prior experience as Range Technician, US Forest Service, (Wall, SD); and Senior Field Wildlife Biologist, Southern Nevada Environmental, Las Vegas, NV.



## 4.2 Distribution List

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This DEIS has been made available for review to the following Federal agencies, federally recognized tribes, State and local governments.

### **Federal Agencies and Elected Officials**

Advisory Council on Historic Preservation  
Animal and Plant Health Inspection Service, Wildlife Service  
Badlands National Park  
Bureau of Land Management  
Environmental Protection Agency  
Federal Aviation Administration  
Federal Highway Administrator (Nebraska & South Dakota)  
Fortenberry, Jeff, Nebraska, United States Representative  
Hagel, Chuck, Nebraska, United States Senator  
Herseth, Stephanie, South Dakota, United States Representative  
Johnson, Tim, South Dakota, United States Senator  
LaCreek National Wildlife Refuge  
National Agricultural Library  
Natural Resource Conservation Service  
Nelson, Ben, Nebraska, United State Senator  
Office of Environmental Policy & Compliance, Department of Interior  
Osborne, Tom, Nebraska, United States Representative  
Thune, John, South Dakota, United States Senator  
U.S. Army Engineers, Northwestern Division  
U.S. Coast Guard, Environmental Impact Branch  
U.S. Department of Energy  
U.S. Fish and Wildlife Service, Department of Interior

### **State Agencies and Elected Officials**

Amack, Rex, Director, Nebraska Game and Parks Commission  
Baron, Leland, South Dakota Office of Water Quality  
Carlson, Merle, Nebraska Department of Agriculture  
Cooper, John, South Dakota Department of Game, Fish & Parks  
Daugaard, Dennis, Lieutenant Governor of South Dakota  
Dunn, LouAnn, South Dakota Animal Industry Board  
Duxbury, Alexis, North Dakota Department of Game and Fish  
Gabriel, Larry, Secretary, South Dakota Department of Agriculture  
Gale, John, Secretary of State, Nebraska  
Garnos, Cooper, South Dakota House of Representatives  
Gray, Bob, South Dakota Senate  
Healey, Bryce, South Dakota School and Public Lands  
Heineman, David, Governor of Nebraska  
Howie, Gordon, South Dakota House of Representatives  
Jensen, Barry, South Dakota House of Representatives  
Koskan, John, South Dakota Senate  
Landguth, Dennis, South Dakota Department of Transportation  
Lintz, Jim, South Dakota Senate

Louden, LeRoy, Nebraska Senate  
Olson, Ryan, South Dakota House of Representatives  
Patterson, Roger, Director, Nebraska Natural Resource Department  
Pederson, Gordon, South Dakota House of Representatives  
South Dakota Environmental and Natural Resources Department  
Rounds, Michael, Governor of South Dakota  
Rounds, Tim, South Dakota House of Representatives  
Sattgast, Rich, South Dakota State Auditor  
South Dakota Archeological Research Center  
South Dakota Association of Conservation District  
South Dakota Department of Tourism and State Development  
Two Hawk, Webster, Tribal Government Relations Office for State of South Dakota  
West River Agricultural Center, South Dakota Cooperative Extension District

**County, City, Local Governments and Elected Officials**

Black Hills Resource Conservation & Development  
Blaine County Commissioners, Nebraska  
Cherry County Commissioners, Nebraska  
Custer County Commissioners, South Dakota  
Dawes County Commissioners, Nebraska  
Dawes County Extension Service, Nebraska  
Eastern Pennington Conservation District  
Fall River County Commissioners, South Dakota  
Hughes County Commissioners, South Dakota  
Jackson County Commissioners, South Dakota  
Jones County Commissioners, South Dakota  
Lyman County Commissioners, South Dakota  
Pennington County Commissioners, South Dakota  
Sioux County Extension, Nebraska  
Sioux County Commissioners, Nebraska  
Stanley County Commissioners, Nebraska  
Thomas County Commissioners, Nebraska  
Upper Niobrara White Natural Resources District, Nebraska

**American Indian Organizations**

Cheyenne River Sioux Tribe  
Cheyenne/Arapahoe Tribes of Oklahoma  
Crow Creek Sioux Tribe  
Eastern Shoshone Tribe  
Flandreau Santee Sioux Tribe  
Grey Eagle Society  
Kiowa Ethnographic Endeavor for Preservation  
Lower Brule Sioux Tribe  
Northern Arapaho Business Council  
Northern Cheyenne Tribe  
Omaha Tribe of Nebraska  
Oglala Sioux Tribe  
Ponca Tribe of Nebraska

Rosebud Sioux Tribe  
Santee Sioux Nation  
Sisseton-Wahpeton Sioux Tribe  
Southern Arapahoe Tribe  
Southern Cheyenne Tribe  
Spirit Lake Sioux Tribe  
Standing Rock Sioux Tribe  
Three Affiliated Tribes  
Winnebago Tribal Council  
Yankton Sioux Tribe

**Others Contacted:**

Approximately 2,000 organizations, media, individuals and other entities will be notified about the availability of this DEIS for review and comment. The aforementioned will also receive an Executive Summary. A copy of the mailing list can be obtained from the administrative record. In addition, thousands of email form letters were received during the initial scoping process. Mailing addresses were unobtainable from these emails.



## LITERATURE CITED

- Apa, A. D., D. W. Uresk, and R. L. Linder. 1990. Black-tailed prairie dog populations one year after treatment with rodenticides. *Great Basin Nat.* 50:107-113.
- Carlson, D. C., and E. M. White. 1987. Effects of prairie dogs on mound soils. *Soil Sci. Soc. Am. J.* 51:389-393.
- Clark T. W. 1970. Revegetation patterns on white-tailed prairie dog burrow mounds. *Wyoming Range Management Issue* 280:8-12.
- Clippinger, N. W. 1989. Habitat suitability index model: black-tailed prairie dog. U.S. Fish and Wildlife Service, Biol. Rep. 82(10). 21pp.
- Conservation Breeding Specialist Group. 2004. Black-footed ferret population management workshop. Final Report. IUCN/SSC Conservation Breeding Specialist Group: Apple Valley, MN.
- Deisch, M. S., D. W. Uresk, and R. L. Linder. 1990. Effects of prairie dog rodenticides on deer mice in western South Dakota. *Great Basin Nat.* 50(4):347-353.
- Fagerstone K.A., and C. A. Ramy. 1996. Rodents and lagomorphs. Pages 83-132 in P.R. Krausman, ed. *Rangeland Wildlife*. The Society for Range Management, Denver, CO. 440pp.
- Franklin W. L., and M. G. Garret. 1989. Nonlethal control of prairie dog colony expansion with visual barriers. *Wildlife Society Bull.* 17:426-430
- Hannus A. L., and P. R. Winham. 1999. Cultural resource evaluation of selected portions of the 777 Ranch, Custer County, South Dakota. *Archaeological Contract Series No.* 158. On file, Nebraska National Forest Supervisors Office. Chadron, NE.
- Hanski, I. 1997. Metapopulation dynamics: from concepts and observations to predictive models. Pages 69-91 in I. Hanski, and M. E. Gilpin, eds. *Metapopulation biology: ecology, genetics and evolution*. Academic Press, San Diego, CA.
- Holechek, J., R. D. Pieper, C. H. Herbel. 2001. *Range management: principles and practices*. Prentice Hall, Englewood Cliffs, NJ.
- Johnson J. 1981. Range dry spells yesterday, today and tomorrow. Pages 68-88 in *Proceedings of the range beef cow symposium VII*. Dec. 7-9, 1981 Rapid City, SD.
- Knowles, C. J. 1985. Observations on prairie dog dispersal in Montana. *Prairie Nat.* 17(1):33-39.

- Knowles, C. J. 1986. Some relationships of black-tailed prairie dogs to livestock grazing. *Great Basin Nat.* 46:198-203.
- Koford, C.B. 1958. Prairie dogs, white faces, and blue grama. *Wildl. Monogr.* No. 3. 78 pp.
- Licht, D. S., and K. D. Sanchez. 1993. Association of black-tailed prairie dog colonies with cattle point attractants in the northern Great Plains. *Great Basin Nat.* 53(4) 385-389.
- Livieri, T.M., and W. Perry. 2005. Effects analysis of black-tailed prairie dog reduction on black-footed ferret populations in Conata Basin. Unpublished report, USDA Forest Service. Wall, SD.
- Luce, R. J. 1999. An umbrella, multi-state approach for the conservation and management of the black-tailed prairie dog, *Cynomys ludovicianus*, in the United States – an addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy. 37 pp.
- Luce, R. J. 2001. An umbrella, multi-state approach for the conservation and management of the black-tailed prairie dog, *Cynomys ludovicianus*, in the United States – an addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy. 79 pp.
- Luce, R. J. 2003. A multi-state conservation plan for the black-tailed prairie dog, (*Cynomys ludovicianus*), in the United States – an addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy. 79 pp.
- Moravek, G. 2004. Number of displaying male prairie grouse. Unpublished File Report dated May 12, 2004. Fort Pierre National Grassland, Fort Pierre, SD.
- Prentiss, W.C. and R. G. Rosenberg. 1996. Cultural resource overview of the Nebraska National Forest. *Frontier Archeology*, Worland, WY.
- Reading, R. P. and R. Matchett. 1997. Attributes of black-tailed prairie dog colonies in north-central Montana. *J. Wildl. Manage.* 61(3):664-673.
- Reece P. E., J. D. Alexander III, and J.R. Johnson. 1991. Drought management on rangeland and pastureland: A handbook for Nebraska and South Dakota. Nebraska Cooperative Extension EC 91-123. University of Nebraska-Lincoln. 23 pp.
- Reid, N. J. 1954. The distribution of the black-tailed prairie dog in the badlands of southwestern North Dakota. M.S. Thesis. Univ. of Iowa, Iowa City. 30pp.
- Sampson, F. B. 2000. Terrestrial assessment: A broad-scale look at species viability on the Northern Great Plains. Unpublished Report, USDA Forest Service. On file, Nebraska National Forest Supervisor's Office. Chadron, NE.

- Sieg, C. H., C. H. Flather, and S. McCanny. 1999. Recent biodiversity patterns in the Great Plains: Implications for restoration and management. *Great Plains Research* 9 (Fall 1999): 277-313.
- South Dakota Department of Game, Fish and Parks. 2005. News Release. January 24, 2005.
- Tietjen, H. P. 1976. Zinc phosphide-its development as a control agent for black-tailed prairie dogs. U. S. Fish and Wildlife Service, Special Scientific Rep., Wildl. No.195. 14pp.
- USDA Forest Service. 1978. Final environmental impact statement: management of prairie dogs on lands administered by the supervisor of the Nebraska National Forest. USDA Forest Service. Chadron, NE.
- USDA Forest Service. 1981. Amendment to final environmental impact statement: management of prairie dogs on lands administered by the supervisor of the Nebraska National Forest. USDA Forest Service. Chadron, NE.
- USDA Forest Service. 1989. Prairie dog management for the Nebraska National Forest and Associated Units. USDA Forest Service. Chadron, NE.
- USDA Forest Service. 2001. Final environmental impact statement for the northern Great Plains management plans revision. USDA Forest Service. Available: [USDA Forest Service 2001 at www.fs.fed.us/ngp](http://www.fs.fed.us/ngp)
- USDA Forest Service. 2002. Land and resource management plan, Nebraska National Forest and associated units. USDA Forest Service. Available: [USDA Forest Service 2001 at www.fs.fed.us/ngp](http://www.fs.fed.us/ngp)
- USDA Forest Service. 2004. FY 2003 Monitoring and evaluation report. Unpublished Report, USDA Forest Service. On file, Nebraska National Forest Supervisor's Office. Chadron, NE.
- USDA Natural Resources Conservation Service. 1996. America's northern plains: An overview and assessment of natural resources. Lincoln, NE.
- U.S. Fish and Wildlife Service. 1988. Black-footed ferret recovery plan. U. S. Fish and Wildlife Service, Denver, CO. 154 pp.
- U.S. Fish and Wildlife Service. 1994. Endangered and threatened wildlife plants; Establishment of a nonessential experimental population of black-footed ferrets in southwestern South Dakota. *Federal Register*, Vol. 59, No. 159, August 18, 1994.
- U.S. Fish and Wildlife Service. 1998. 12-month administrative finding for a petition to



list the black-tailed prairie dog from the National Wildlife Federation. U.S. Fish and Wildlife Service. Pierre, SD. 78 pp.

U.S. Fish and Wildlife Service. 2000. Endangered and threatened wildlife and plants; 12-month finding for a petition to list the black-tailed prairie dog as threatened. Federal Register, Vol. 65, No. 24, February 4, 2000.

U.S. Fish and Wildlife Service. 2004. Endangered and threatened wildlife plants; Finding for the resubmitted petition to list the black-tailed prairie dog as threatened. Federal Register, Vol. 69, No. 159, August 18, 2004.

U.S. Fish and Wildlife Service, National Park Service, and Forest Service. 1994. Final environmental impact statement: black-footed ferret reintroduction in Conata Basin/Badlands, South Dakota. U.S. Fish and Wildlife Service, Pierre, SD. 130 pp.

Uresk, D.W., R. M. King, A. D. Apa, and R. L. Linder. 1986. Efficacy of zinc phosphide and strychnine for black-tailed prairie dog control. J. of Range Manage. 39(4):298-299.

Uresk, D.W., R. M. King, A. D. Apa, M. S. Deisch, and R. L. Linder. 1987. Rodenticide effects of zinc phosphide and strychnine on nontarget species. Paper presented at the 8<sup>th</sup> Great Plains Damage Control Workshop. (Rapid City, SD, April 28-30, 1987).

Van Pelt, W.E. 1999. The black-tailed prairie dog conservation assessment and strategy-final draft. Nongame and Endangered Wildlife Program. Arizona Game and Fish Department, Phoenix, AZ.

Vosburgh, T.C., and L.R. Irby. 1998. Effects of recreational shooting on prairie dog colonies. J. Wildlife Manage 62:363-372.

Whicker A.D., and J. K. Detling. 1988. Ecological consequences of prairie dog disturbances. BioScience 38(11):778-785.

## INDEX

- Abbreviations, 7
- Abstract, 3
- Acronyms, 7
- Affected Environment and Environmental Consequences, 26
- Air Resources, 30
- Alternatives, ii
  - alternative 1 - no action, 11
  - alternative 2, 13
  - alternative 3, 15
  - conservation measures common to all, 20
  - considered but eliminated from detailed study, 20
  - considered in detail, 11
- American Bittern, 40
- American Indian Organizations, 64
- Appendices, 72
- Authorities, 3
- Bald Eagle, 39, 43
- Barr's Milkvetch, 41
- Biological determinations, 41, 42
- Biological determinations for sensitive species, 44
- Black Tern, 40
- Black-footed Ferret, 7, iv, 8, 22, 39, 43
- Black-tailed Prairie Dog, 40
- Boundary Management Tools
  - comparison of, 19
- Brewer's Sparrow, 40, 45
- Chestnut-collared Longspur, 40, 44
- City. *See* County, City, Local Governments and Elected Officials
- Comments
  - Send to, 4
- Commitments of Resources
  - Irreversible and Irretrievable, 56
- Counties and State
  - within the project area, 1
- County, City, Local Governments and Elected Officials, 64
- Cumulative Effects
  - Common to all alternatives, 56
- Dakota Buckwheat, 41
- Decision Framework, 7
- Distribution List, 63
- Document Structure
  - How to read this EIS document, 9
- Drought, 10, 31, 36, 38, 52, 54, 56
- Economic Factors, 52
- Effects
  - comparison of, 20
- Elected Officials
  - county, 64
  - federal, 63
  - state, 63
- Environmental Consequences
  - See* Affected Environment, 26
- Environmental Justice, 58
- Federal Agencies and Elected Officials, 63
- Ferruginous Hawk, 40, 44
- Figures
  - list of, 6
- Finescale Dace, 41
- Floodplain Management, 58
- Fringed Myotis, 40
- Grasshopper Sparrow, 40, 45
- Greater Prairie Chicken, 40, 44
- Greater Sage Grouse, 40, 44
- Hall's Bulrush, 41
- Heritage Resources, 33
- Issues
  - indicators, 9
  - key, 8
- Lesser Bladderwort, 41
- Lesser Panicked Sedge, 41
- Lesser Yellow Lady's Slipper, 41
- List of Preparers, 60
- Literature Cited, 66
- Local Governments. *See* County, City, Local Governments and Elected Officials
- Loggerhead Shrike, 40
- Long-billed Curlew, 40, 44
- Management Indicator Species, 45
- McCown's Longspur, 40, 44
- Mountain Plover, 40, 45
- Northern Goshawk, 40
- Northern Harrier, 40, 44
- Northern Leopard Frog, 40
- Northern Redbelly Dace, 41
- Oil and Gas Resources, 55

Other Related Efforts, 9  
Ottoe Skipper, 41  
Paleontological Resources, 35  
Pearl Dace, 41  
Peregrine Falcon, 40  
Plains Leopard Frog, 40  
Plains Minnow, 41  
Productivity  
    Short-term & Long-term, 56  
Proposed Actions, 6  
Protection of Wetlands, 58  
Public Involvement, 8  
Purpose and Need, 4  
Purpose of and Need, 1  
Rangeland Resources, 36  
Recreation, 51  
Regal Fritillary, 40, 45  
Service Sensitive Species, 38  
Short-eared Owl, 40, 45  
Slender Cottongrass, 41  
Social Factors, 52  
Soil Resources, 31

South Dakota Black-tailed Prairie Dog  
    Conservation and Management Plan  
        website, 5  
Species at Risk, 38  
    species eliminated from further detailed  
        analysis, 40  
Spinulose Woodfern, 41  
State Agencies and Elected Officials, 63  
Sturgeon Chub, 41  
Summary, ii  
Swift Fox, 40, 44  
Table of Contents, 5  
Tables  
    list of, 6  
Threatened, Endangered, Proposed Species, 38  
Townsend's Big-eared Bat, 40  
Trumpeter Swan, 40, 45  
Water Resources, 31  
Western Burrowing Owl, 40, 44  
Whooping Crane, 39, 43  
Yellow Widelip Orchid, 41  
Yellow-billed Cuckoo, 40



## **APPENDICES**

**Appendix A - Maps**

**Appendix B - Implementation Plans**

**Appendix C - LRMP Amendments**

**Appendix D - Implementation Costs**

**Appendix E - Biological Assessment and Evaluation**

**Appendix F - Scientific Names**

**Appendix G - Glossary**

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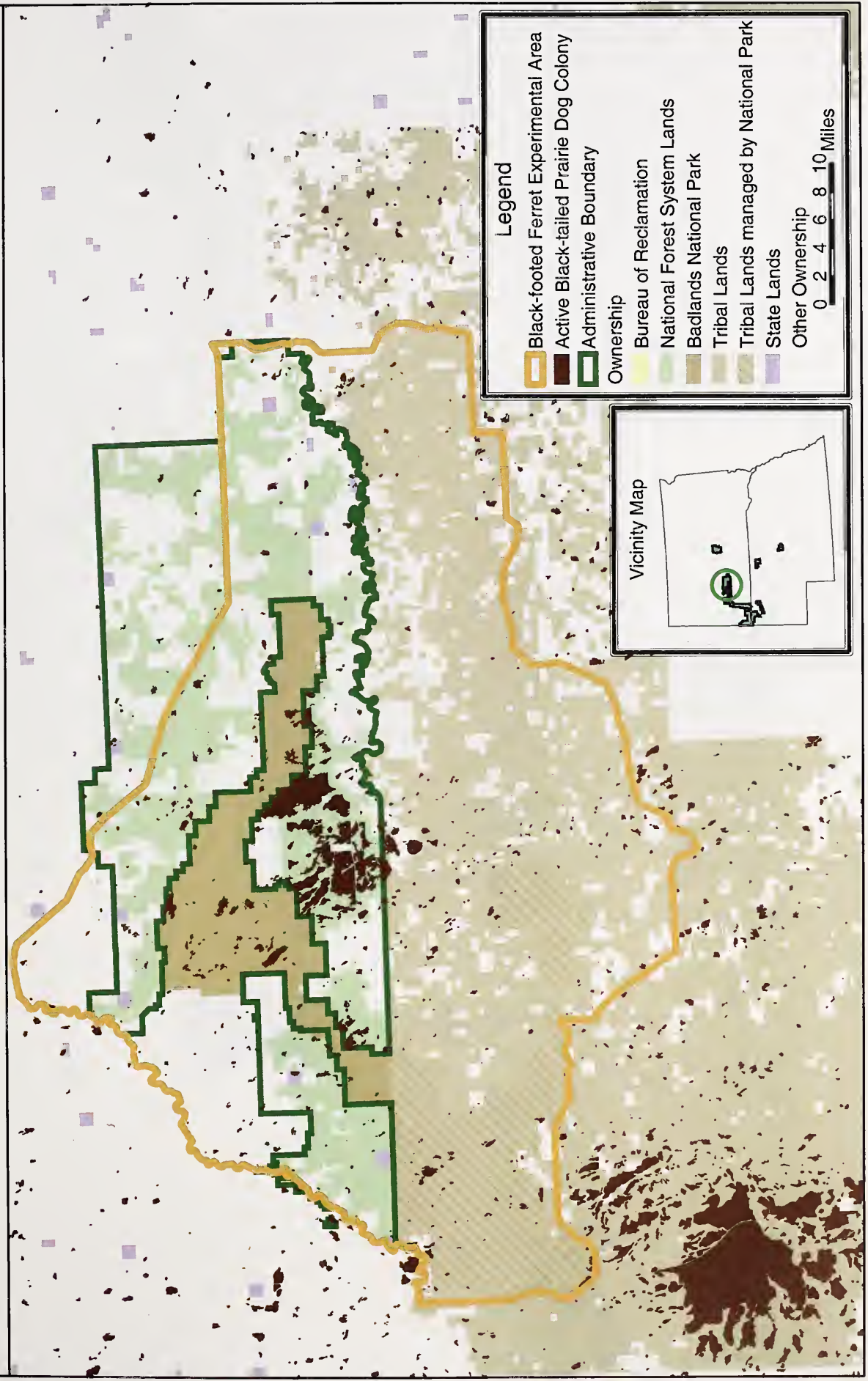
# **APPENDIX A**

## **MAPS**

This product is reproduced from geospatial information prepared by the U.S. Department of Agriculture. GIS data and product accuracy may vary. They may be: developed for sources of differing accuracy, accurate at only certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those, for which they were created, may yield inaccurate or misleading results. This information was released on February 22, 2005. The Forest Service reserves the right to correct, update, modify, or replace, GIS products "based on new inventories, new or revised information, and if necessary in conjunction with other federal, state or local public agencies or the public in general as required by policy or regulation. Previous recipients of the products may not be notified unless required by policy or regulation." For more information, contact Supervisors Office, Nebraska National Forest, 308-432-0300.



# Experimental Population Area for Black-footed Ferrets Conata Basin/Badlands, South Dakota



**Legend**

- Black-footed Ferret Experimental Area
- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

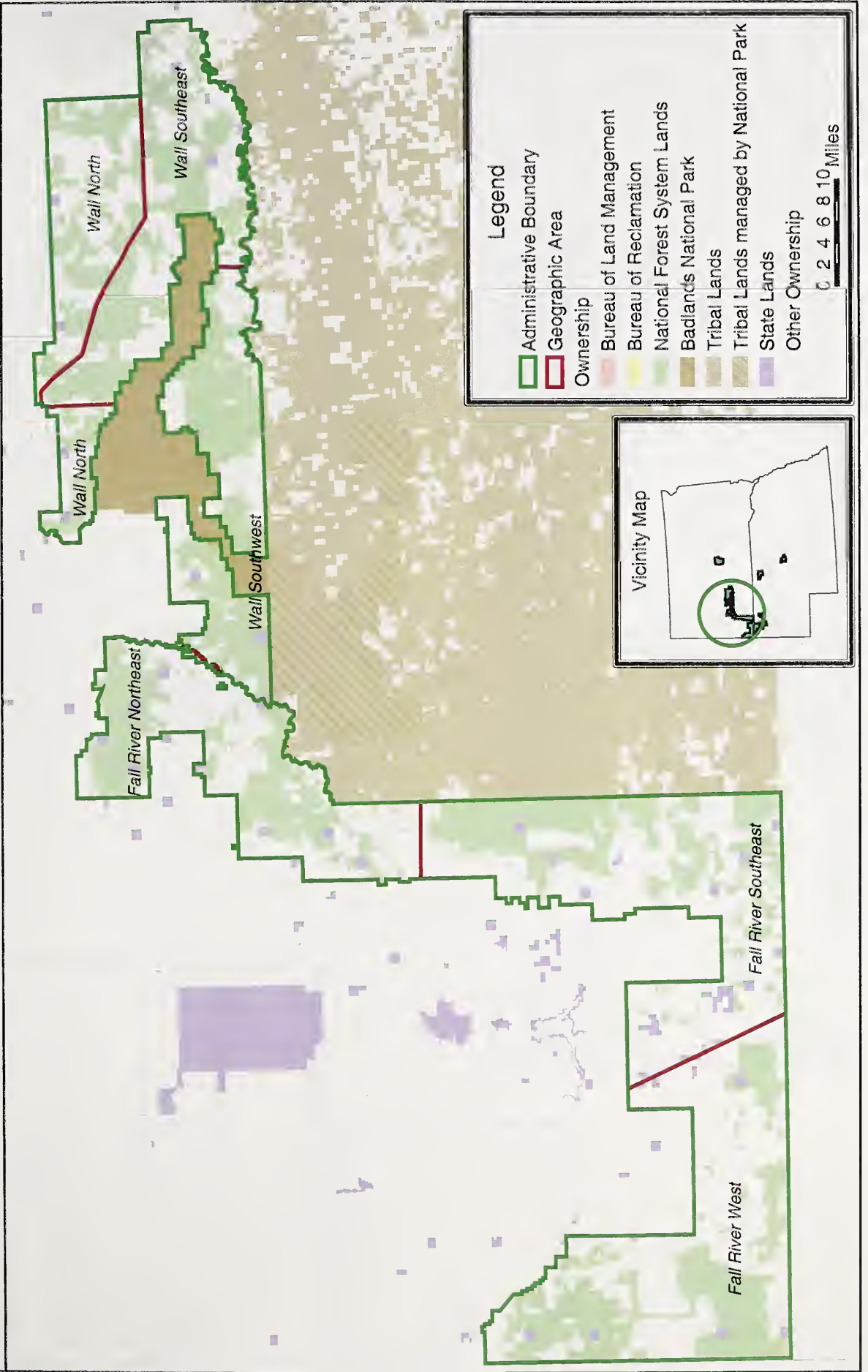
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# Geographic Areas on the Buffalo Gap National Grassland







# 2004 Active Black-tailed Prairie Dog Colonies West Half Buffalo Gap National Grassland

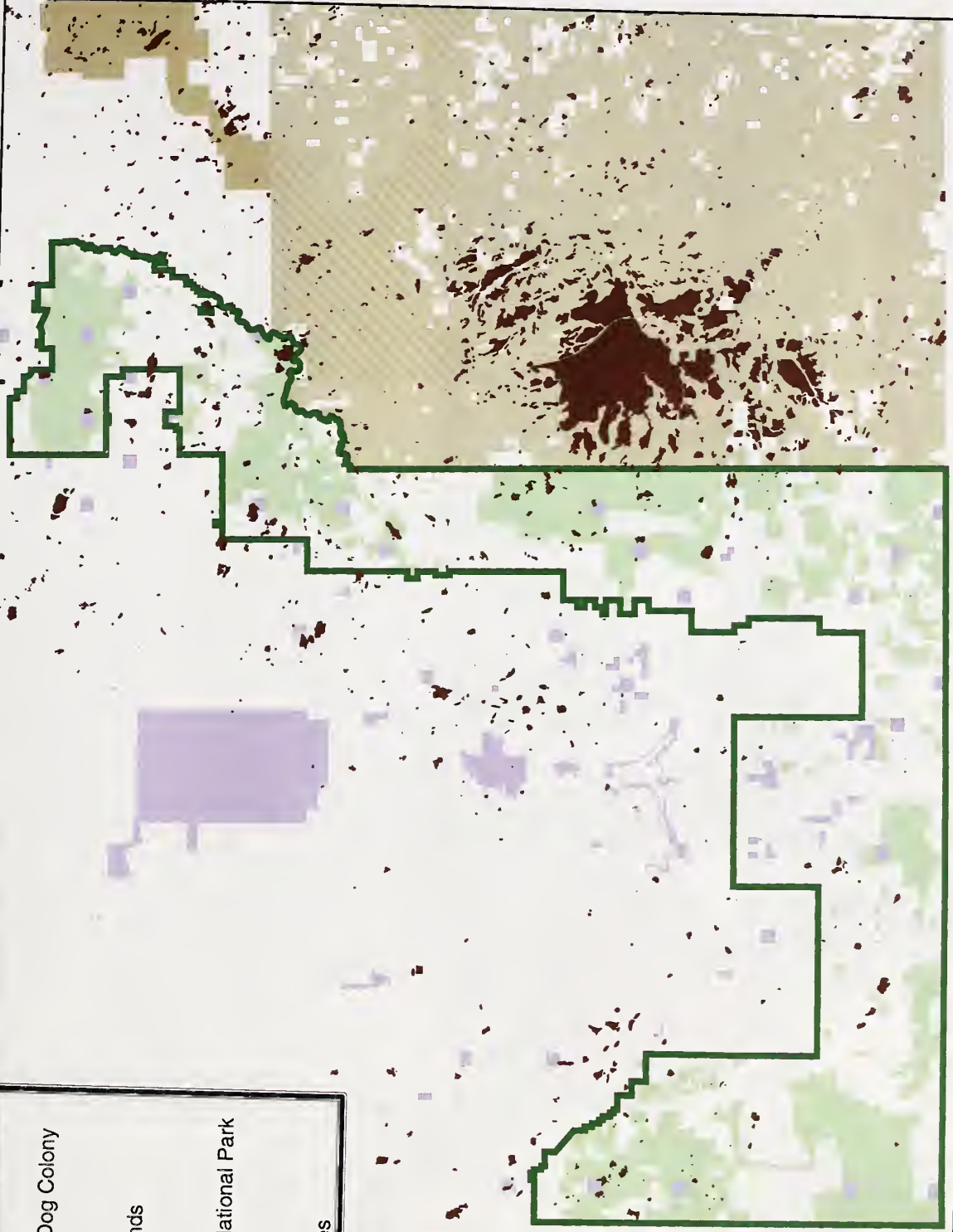
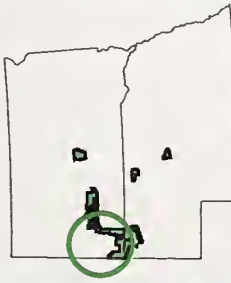


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

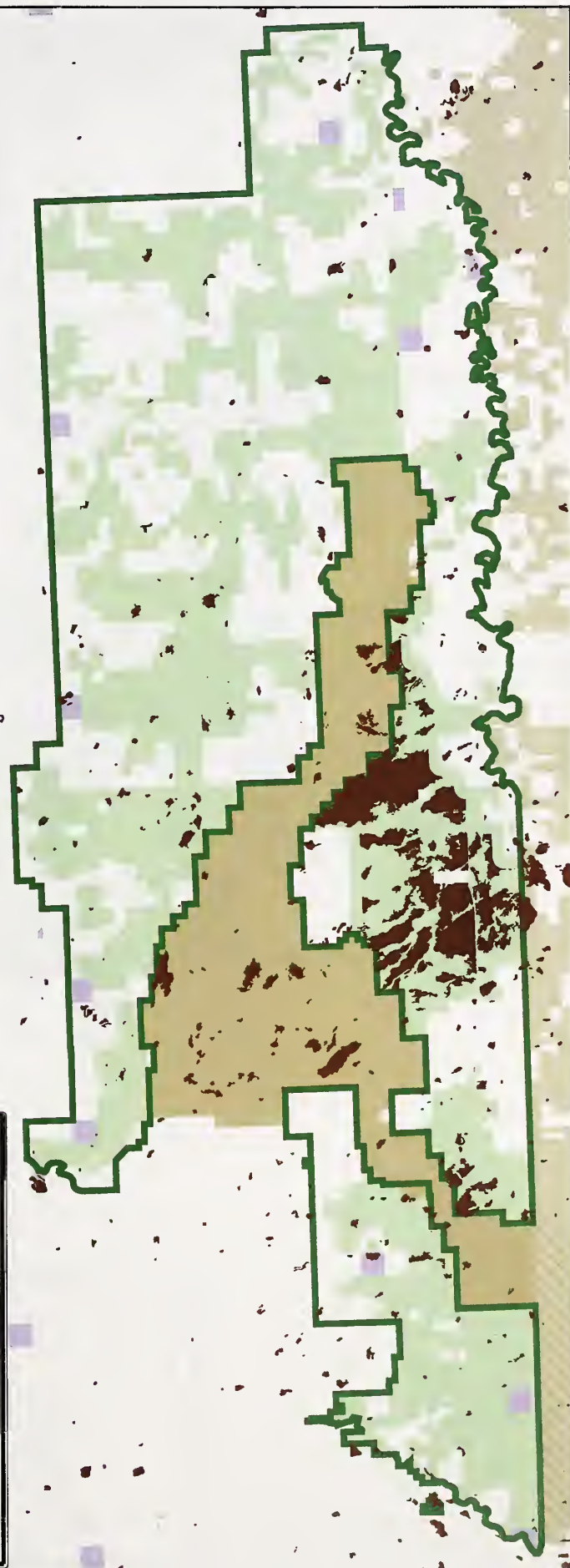
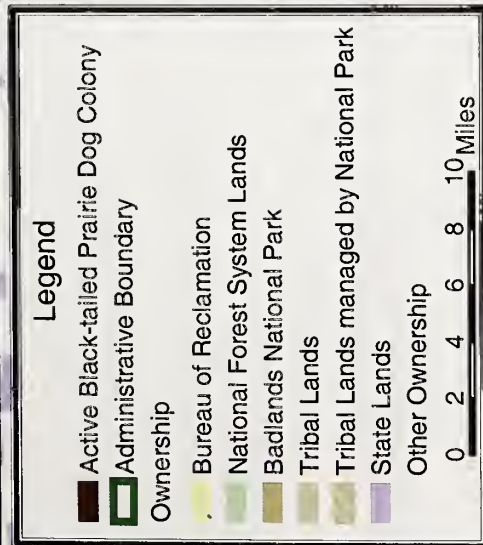
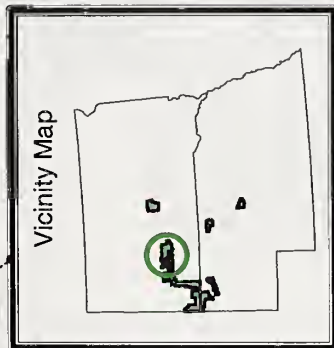
## Vicinity Map







## 2004 Active Black-tailed Prairie Dog Colonies East Half Buffalo Gap National Grassland









# 2004 Active Black-tailed Prairie Dog Colonies Fort Pierre National Grassland



## Legend

Active Black-tailed Prairie Dog Colony

Administrative Boundary

Ownership

National Forest System Lands

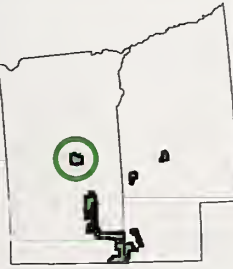
Tribal Lands

State Lands

Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map

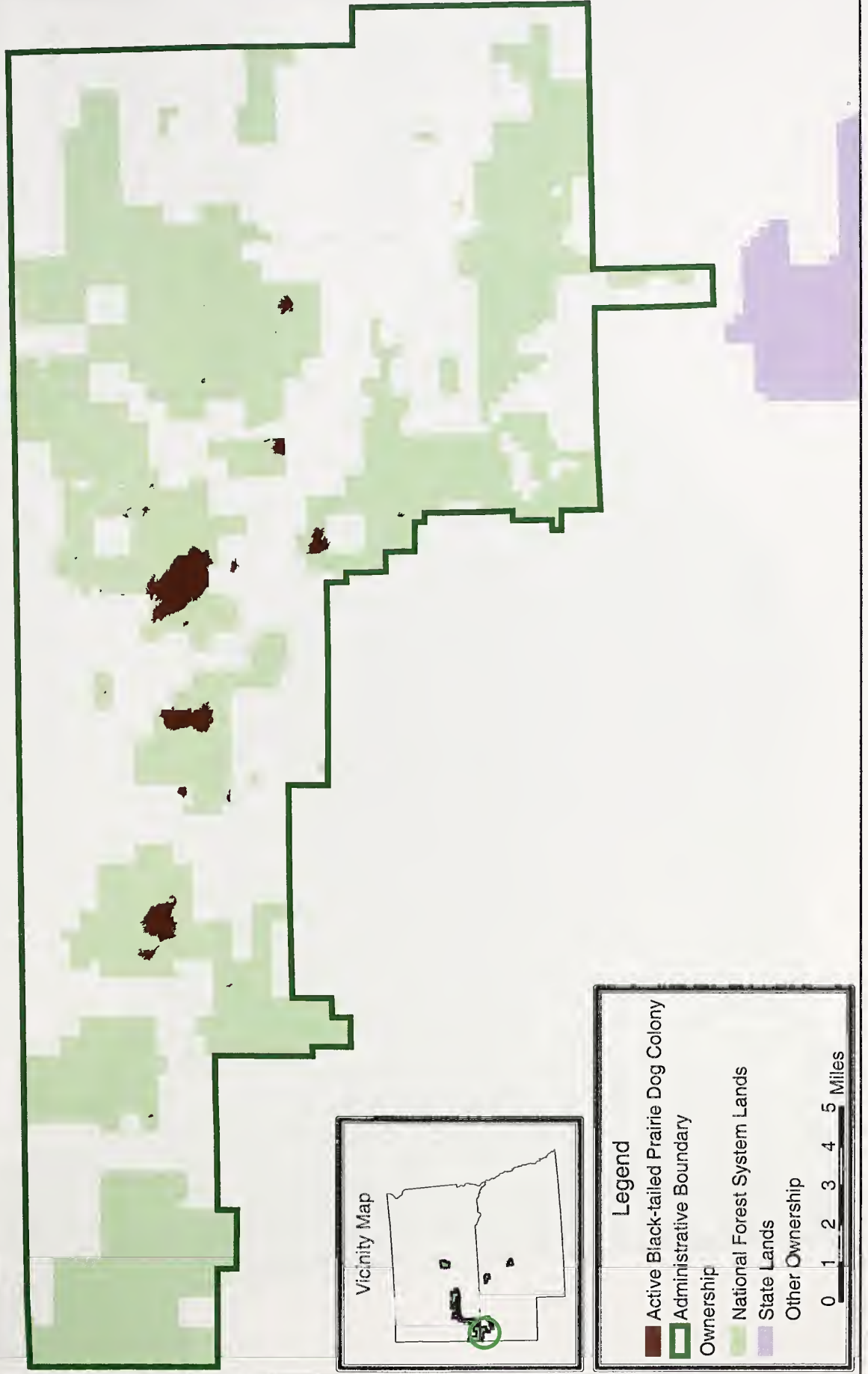








# 2004 Active Black-tailed Prairie Dog Colonies Oglala National Grassland







# 2004 Active Black-tailed Prairie Dog Colonies Bessey Ranger District

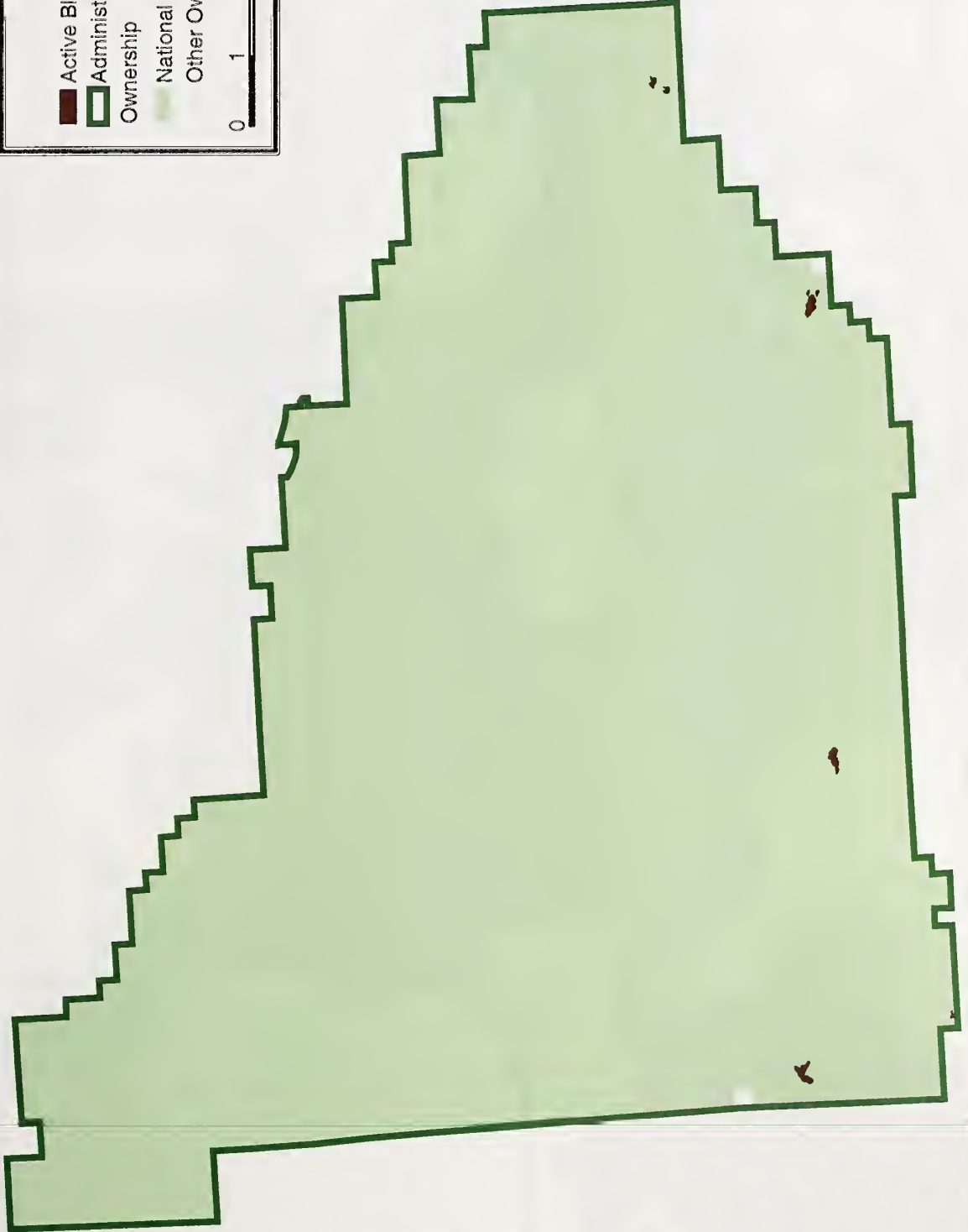


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Ownership
- National Forest System Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map

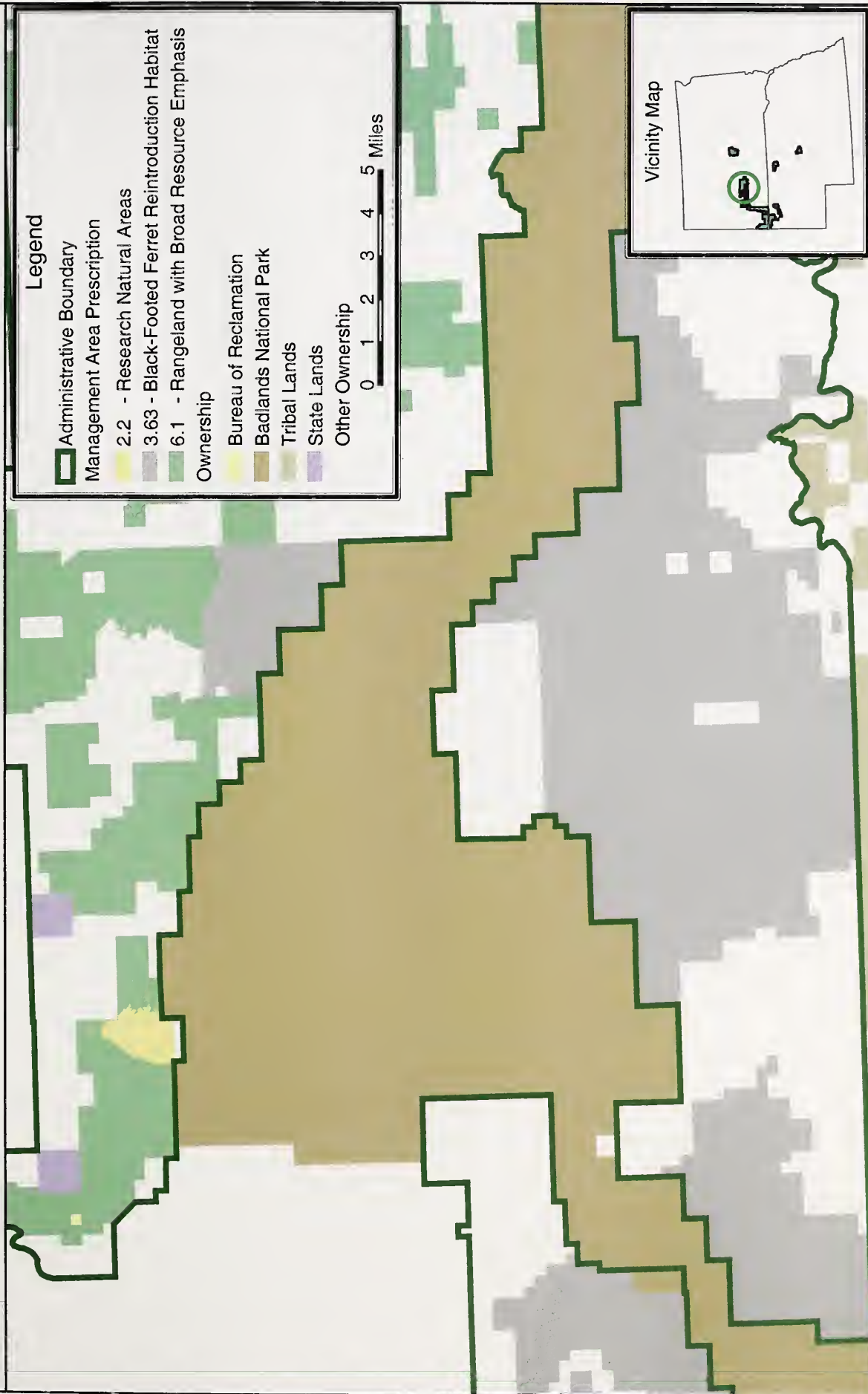








# Existing Management Area Prescriptions within the Conata Basin Buffalo Gap National Grassland

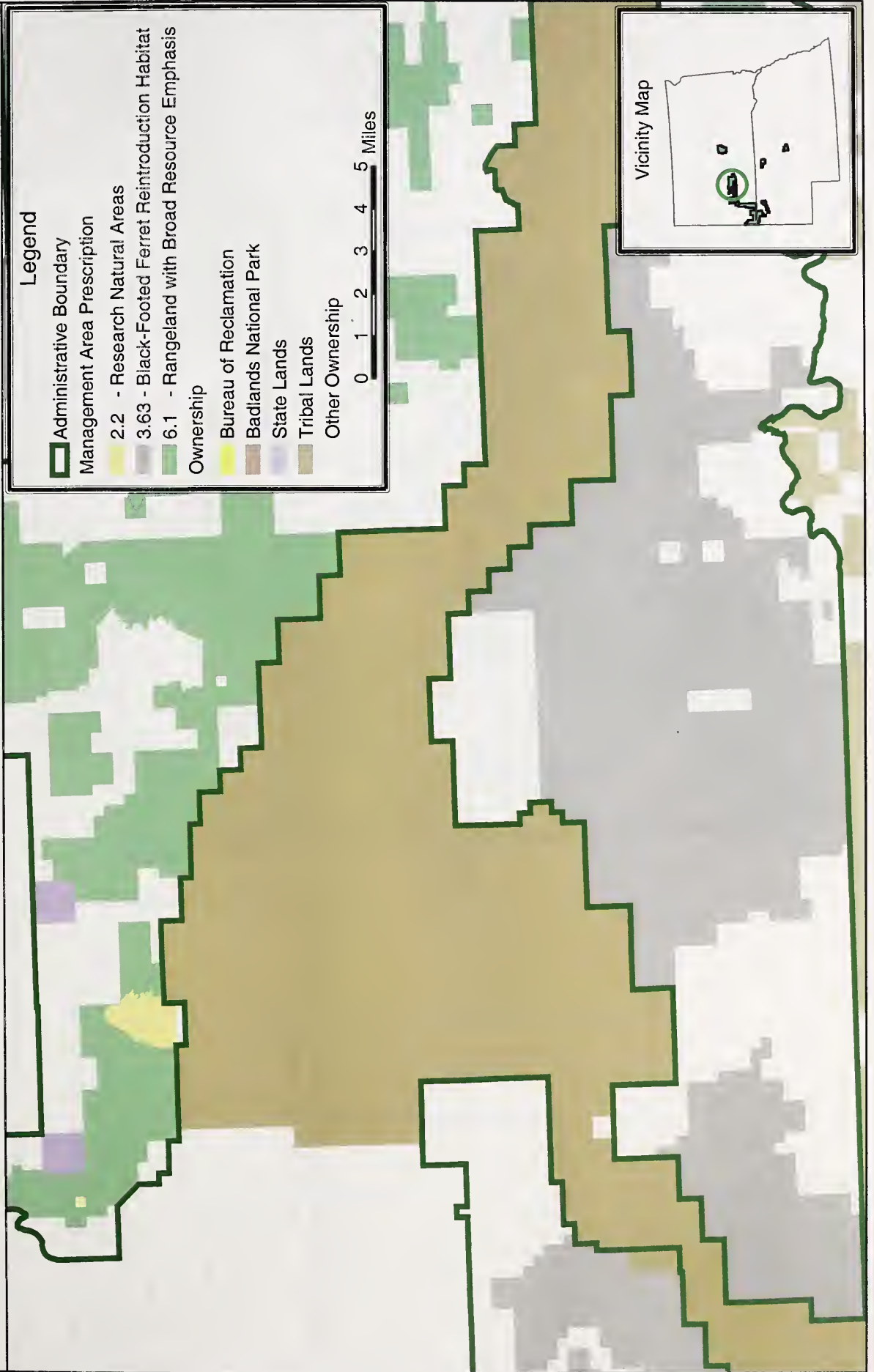








# Proposed Change to Management Area Prescriptions within the Conata Basin Buffalo Gap National Grassland







# Alternative One

(Non-Lethal Mangement Tools Emphasized)

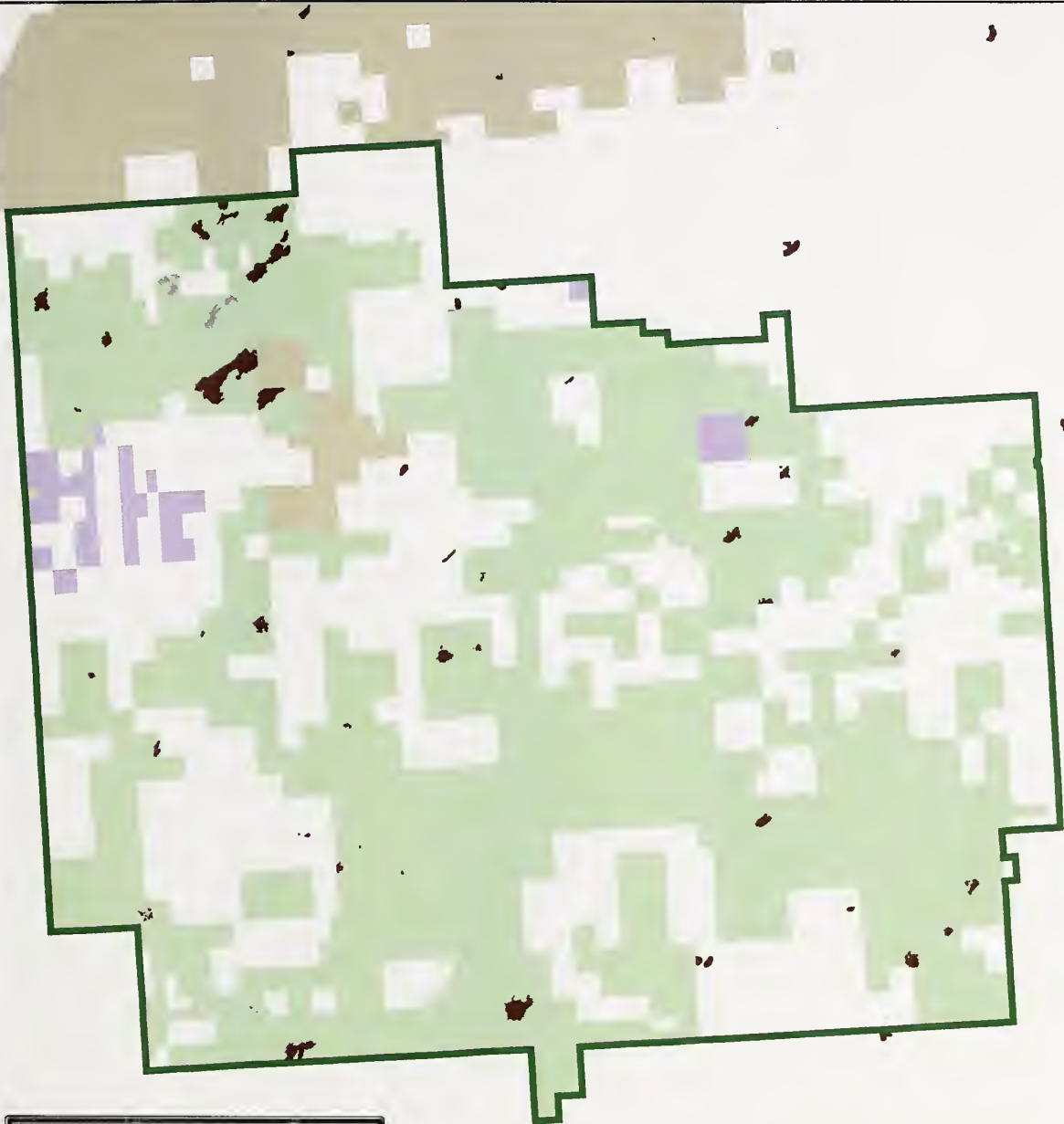
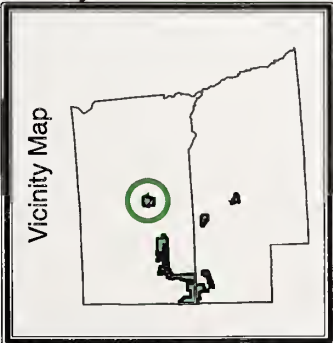
Fort Pierre National Grassland



**Legend**

- Active Black-Tailed Prairie Dog Colony
- Colony subject to rodenticide use (Health & Safety)
- Administrative Boundary
- Ownership**
  - National Forest System Lands
  - Tribal Lands
  - State Lands
  - Other Ownership

0 1 2 3 4 5 Miles









# Alternative Two (One Mile Boundary Management Zone) Fort Pierre National Grassland



## Legend

■ Active Black-tailed Prairie Dog Colony

▨ Boundary Management Zone

■ Administrative Boundary

Ownership

■ National Forest System Lands

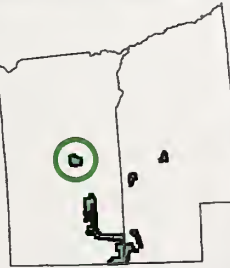
■ Tribal Lands

■ State Lands

■ Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map







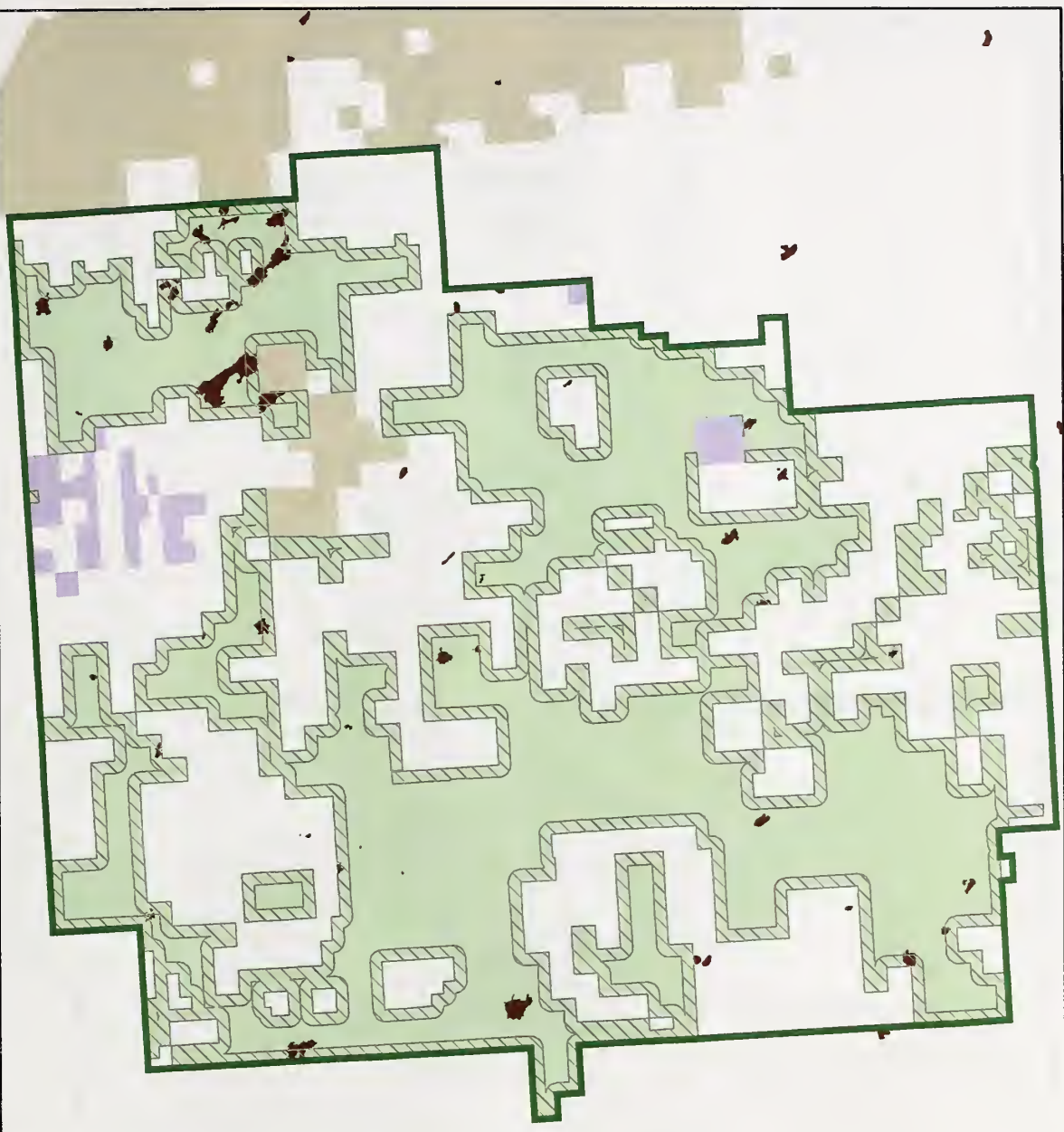


# Alternative Three (Quarter-Mile Boundary Management Zone) Fort Pierre National Grassland

## Legend

- Active Black-tailed Prairie Dog Colony
  - Boundary Management Zone
  - Administrative Boundary
  - Owenship
  - National Forest System Lands
  - Tribal Lands
  - State Lands
  - Other Ownership
- 0 1 2 3 4 5 Miles

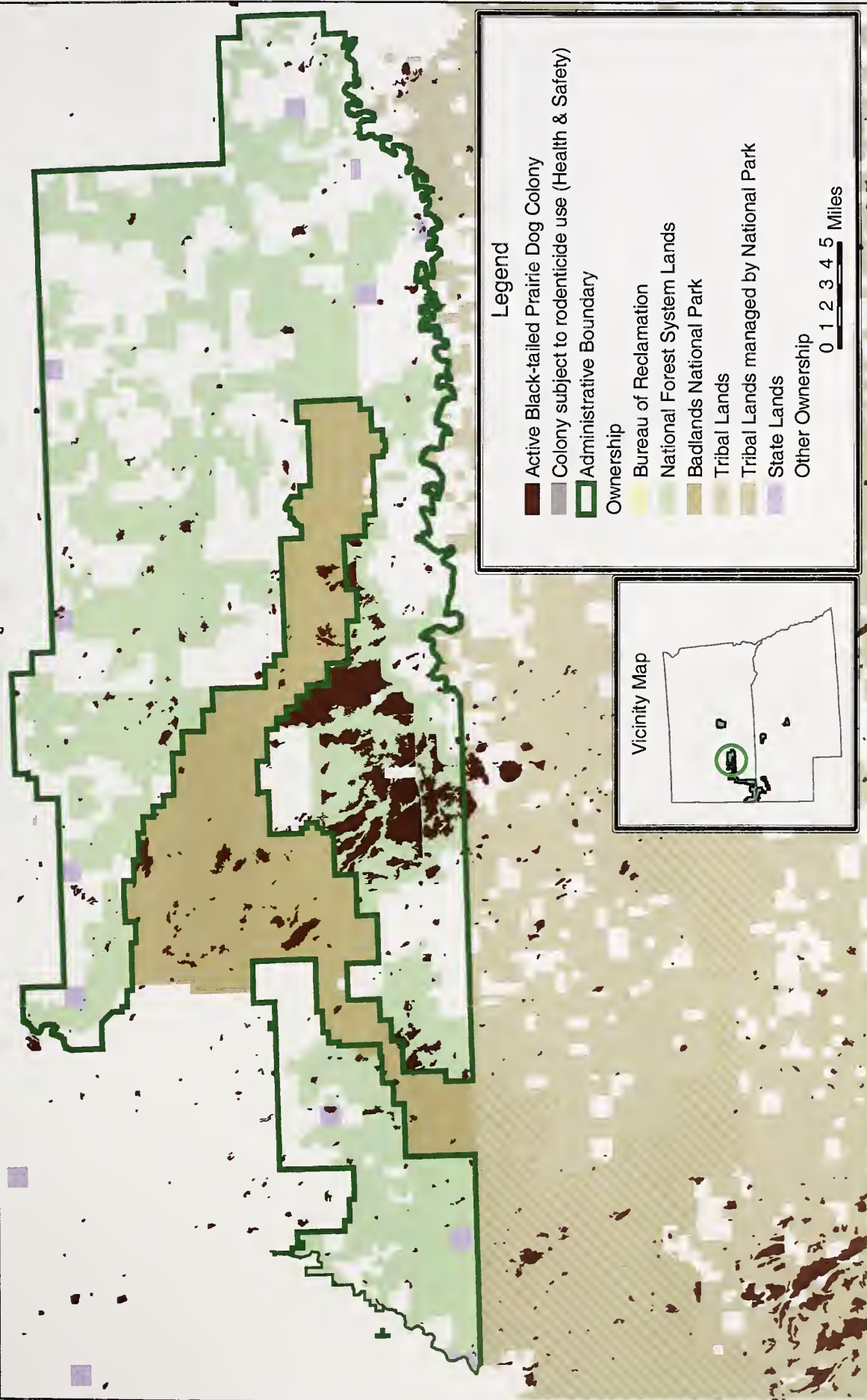
## Vicinity Map







# Alternative One (Non-Lethal Management Tools Emphasized) East Half Buffalo Gap National Grassland

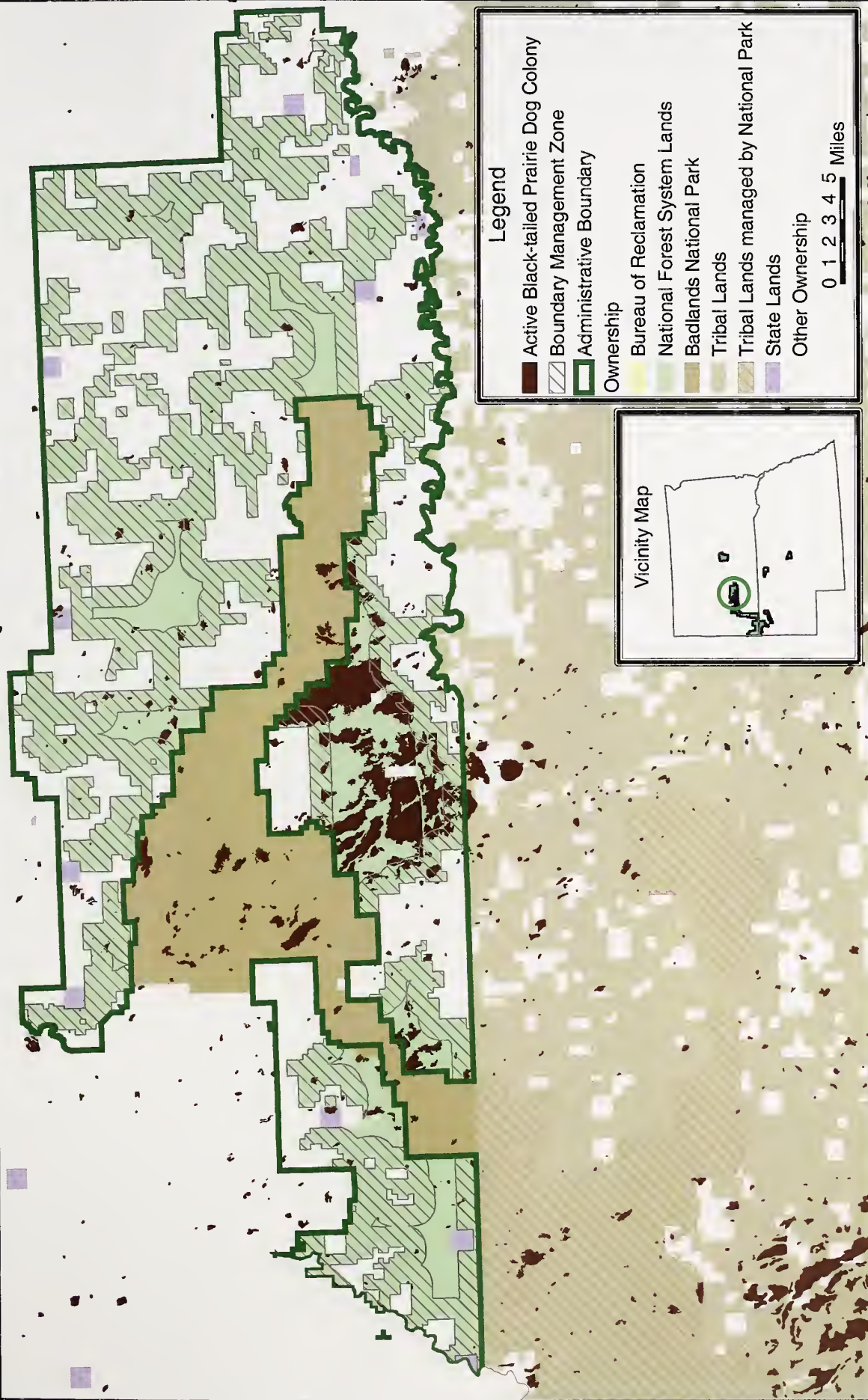








# Alternative Two (One Mile Boundary Management Zone) East Half Buffalo Gap National Grassland

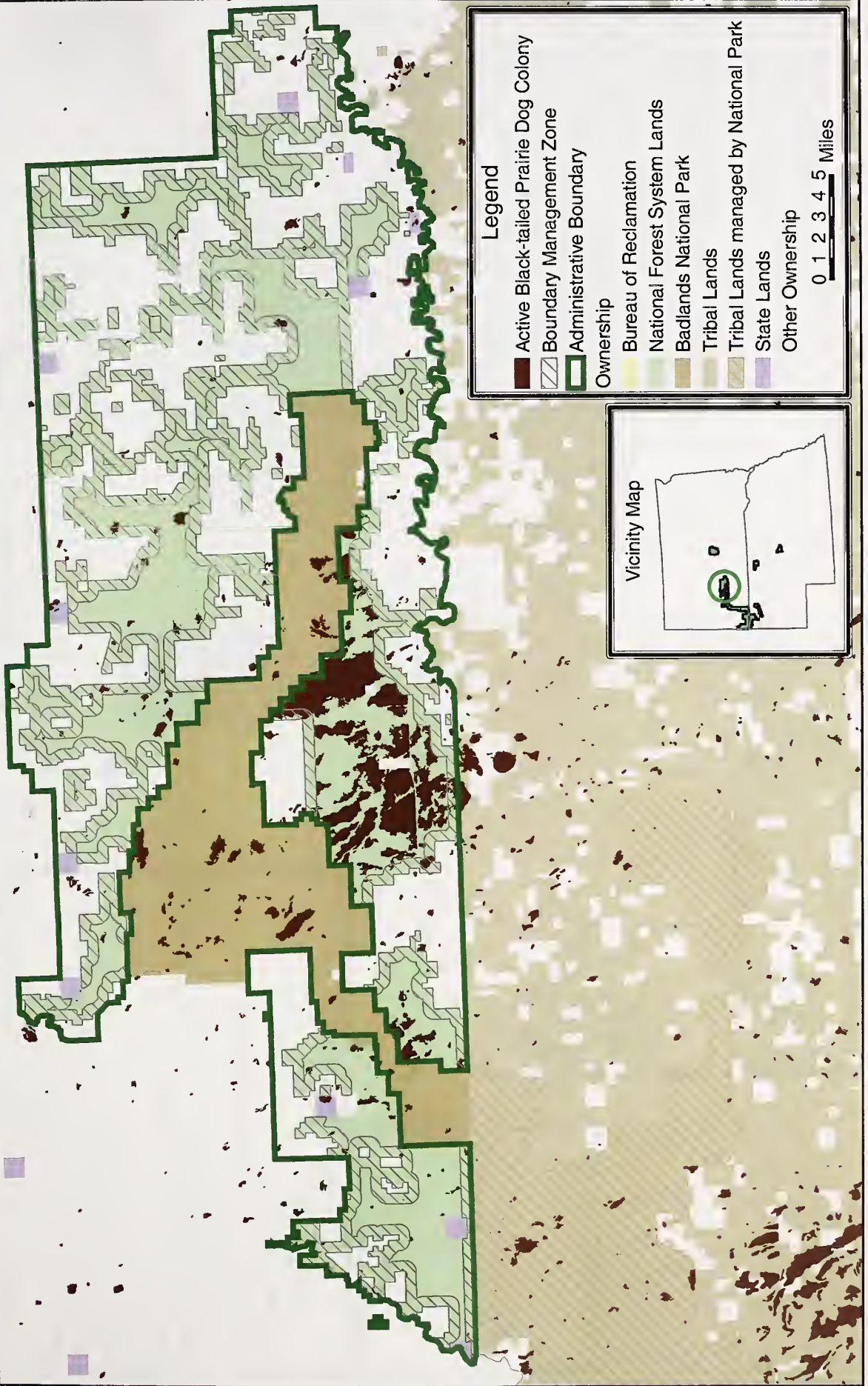








# Alternative Three (Half-Mile Boundary Management Zone) East Half Buffalo Gap National Grassland







# Alternative One (Non-Lethal Management Tools Emphasized) West Half Buffalo Gap National Grassland

## Legend

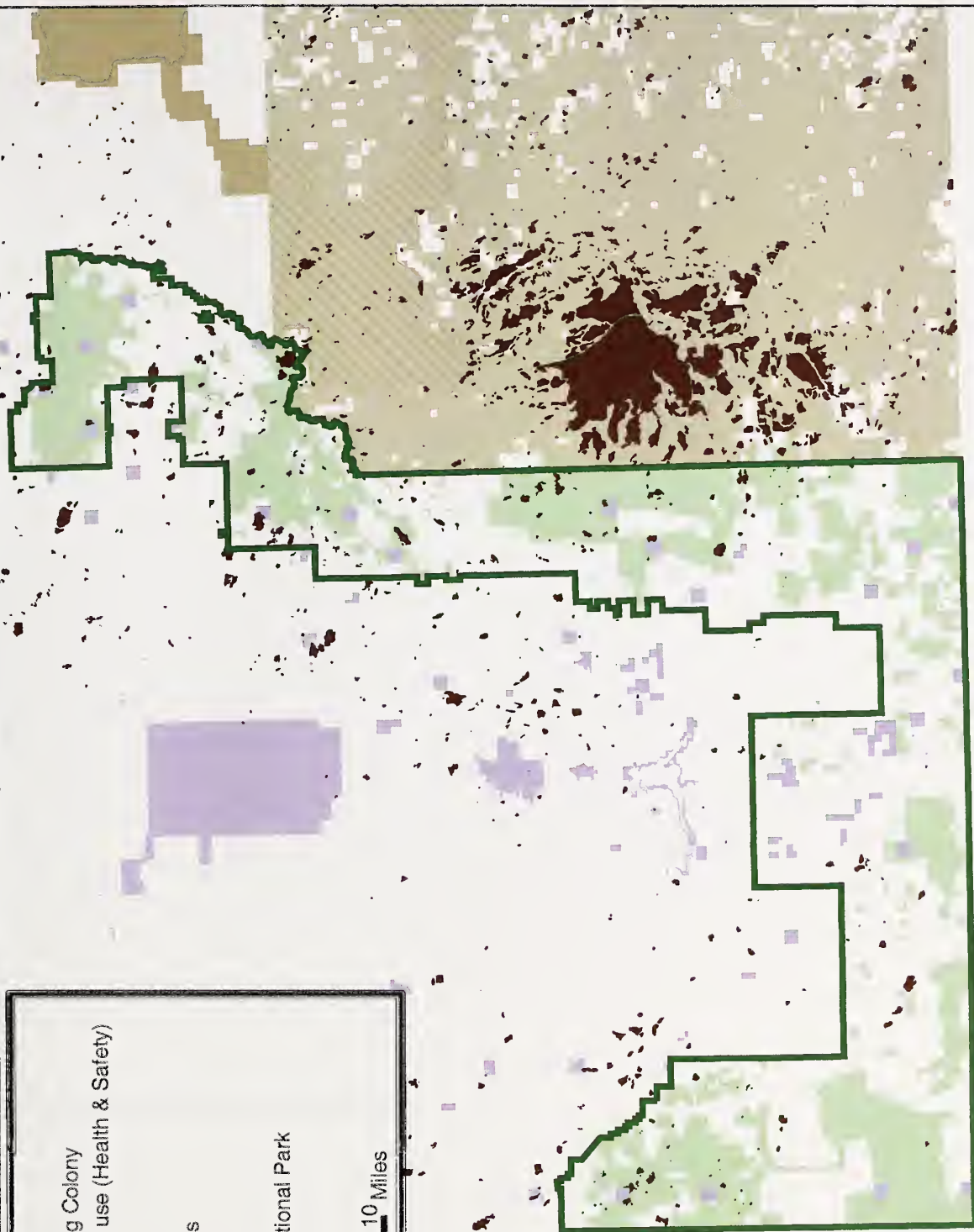
- Active Black-tailed Prairie Dog Colony
- Colony subject to rodenticide use (Health & Safety)
- Administrative Boundary

## Ownership

- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map









# Alternative Two

## (One Mile Boundary Management Zone) West Half Buffalo Gap National Grassland



Active Black-tailed Prairie Dog Colony

Boundary Management Zone

Administrative Boundary

Ownership

National Forest System Lands

Badlands National Park

Tribal Lands

Tribal Lands managed by National Park

State Lands

Other Ownership

0

2

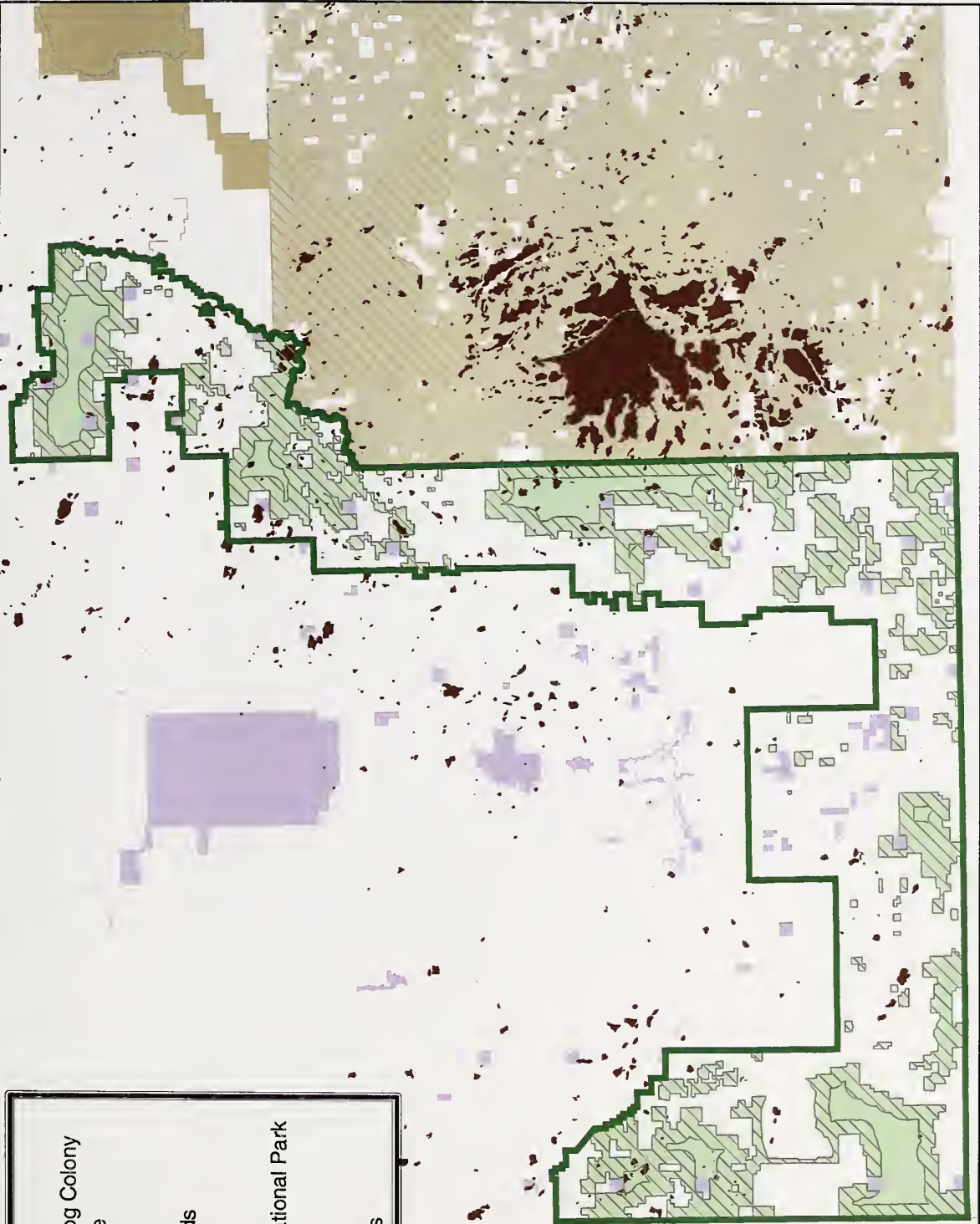
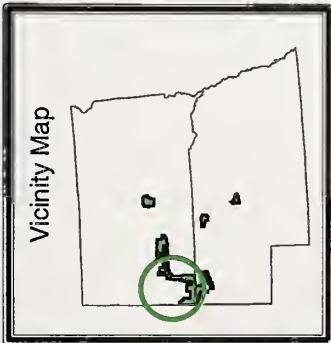
4

6

8

10

Miles









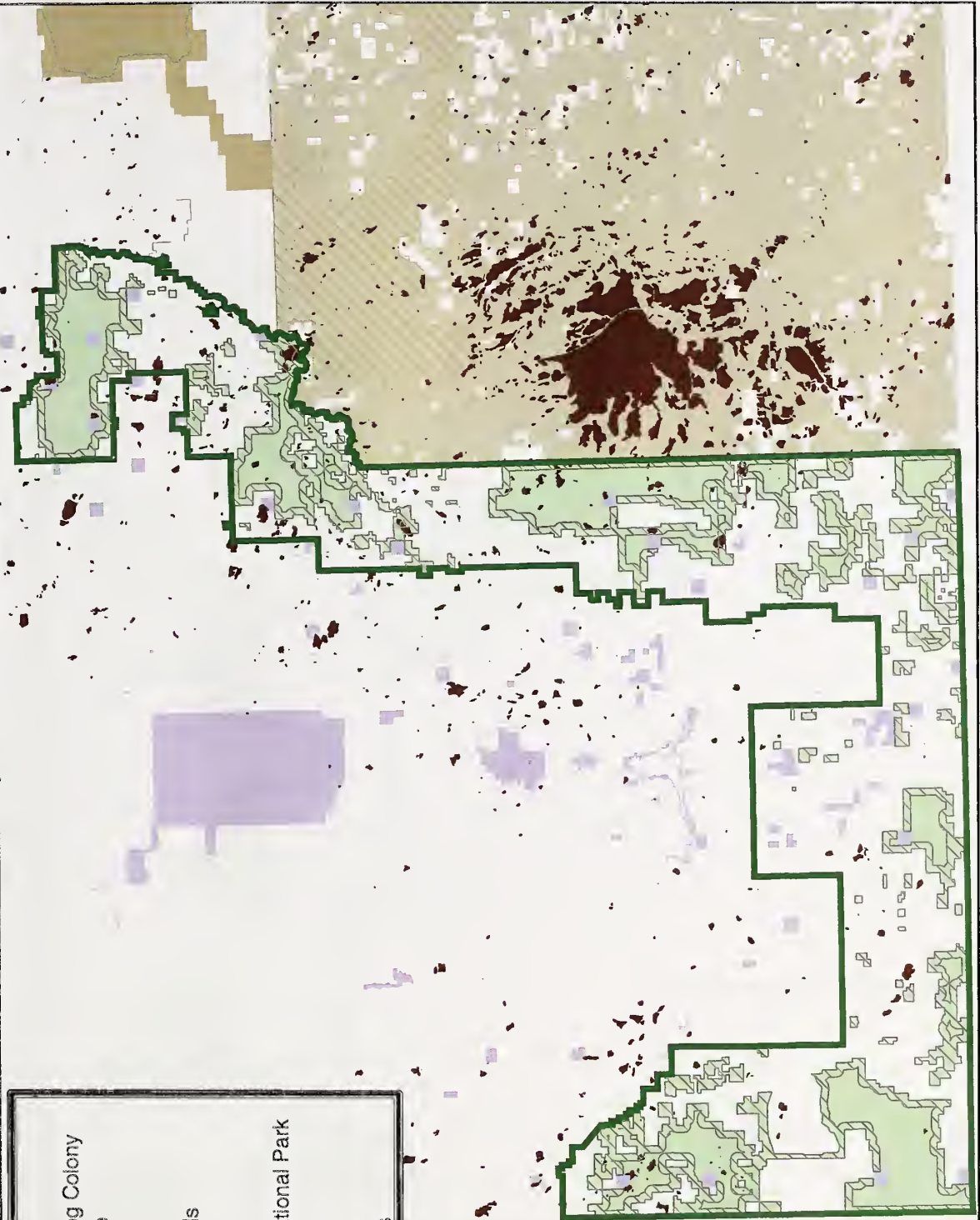
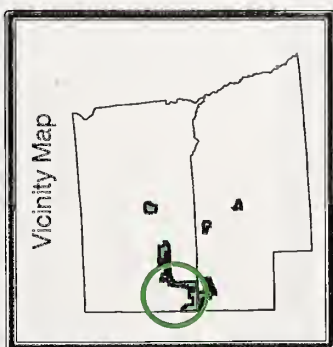
Alternative Three  
(Half-Mile Boundary Management Zone)  
West Half Buffalo Gap National Grassland



**Legend**

	Active Black-tailed Prairie Dog Colony
	Boundary Management Zone
	Administrative Boundary
	Ownership
	National Forest System Lands
	Badlands National Park
	Tribal Lands
	Tribal Lands managed by National Park
	State Lands
	Other Ownership

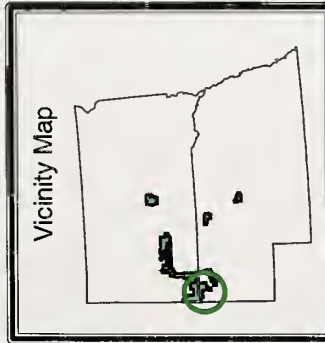
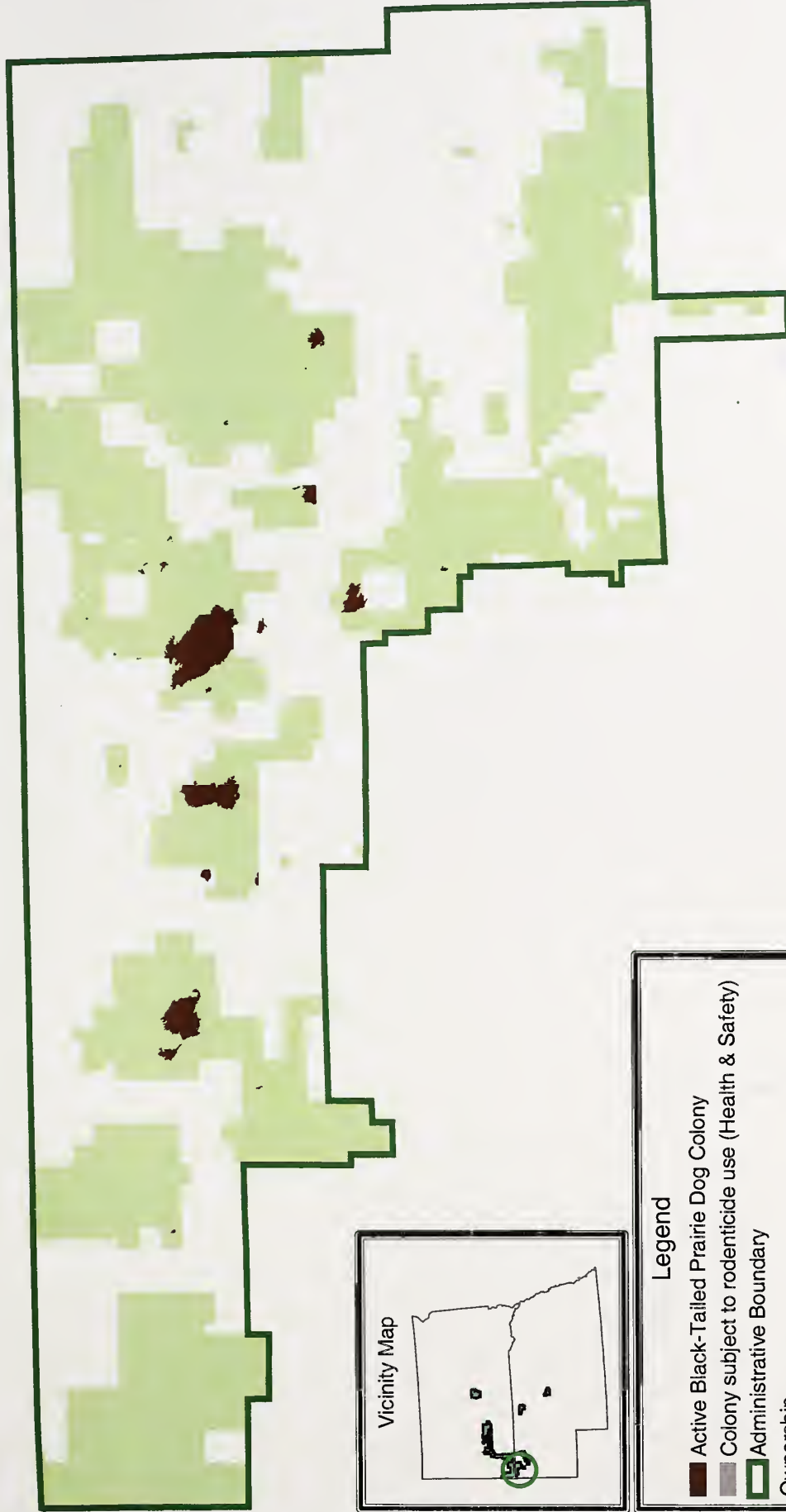
0 2 4 6 8 10 Miles







Alternative One  
(Non-Lethal Management Tools Emphasized)  
Oglala National Grassland



**Legend**

- Active Black-Tailed Prairie Dog Colony
- Colony subject to rodenticide use (Health & Safety)
- Administrative Boundary
- Ownership
  - National Forest System Lands
  - State Lands
  - Other Ownership

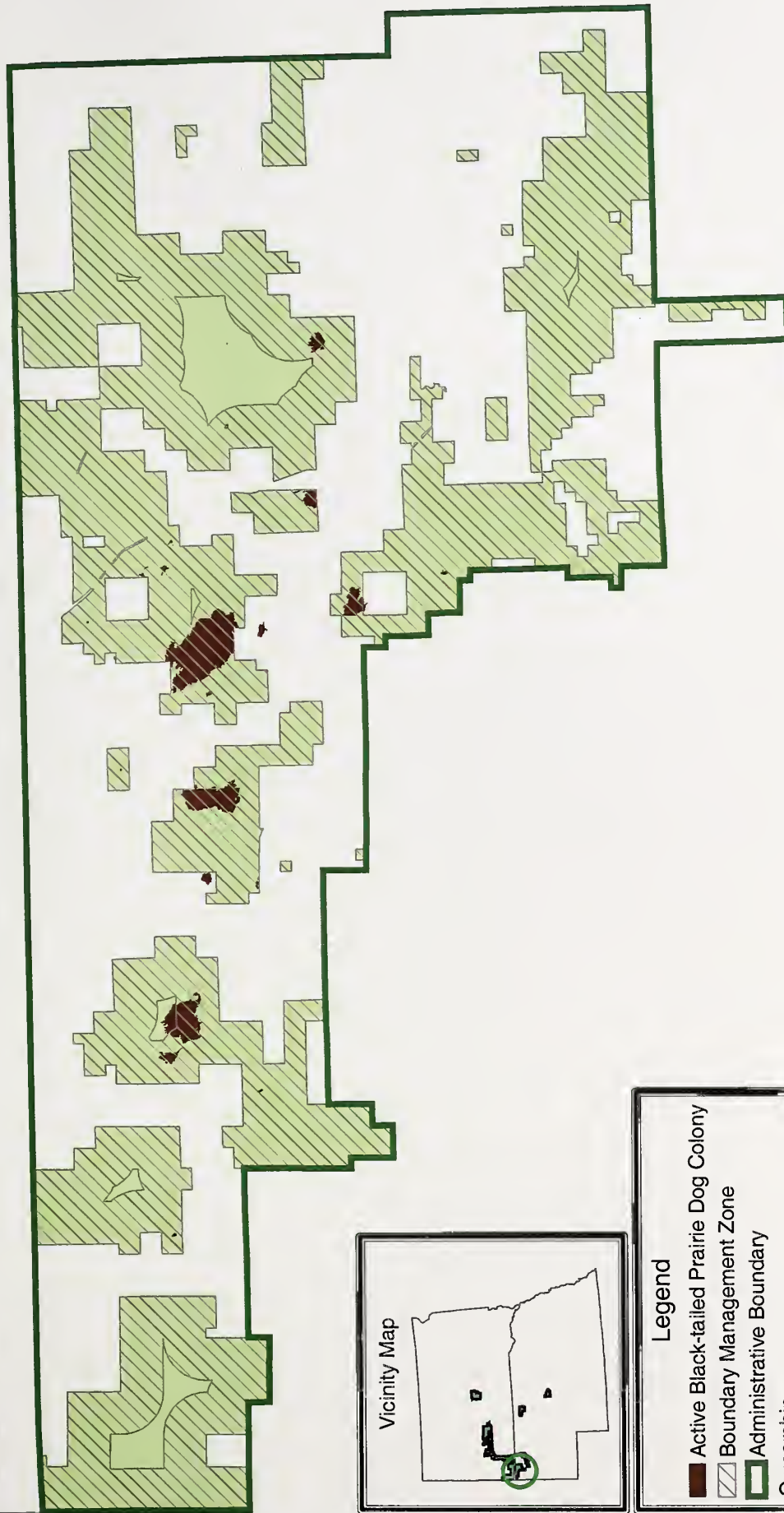
0 1 2 3 4 5 Miles



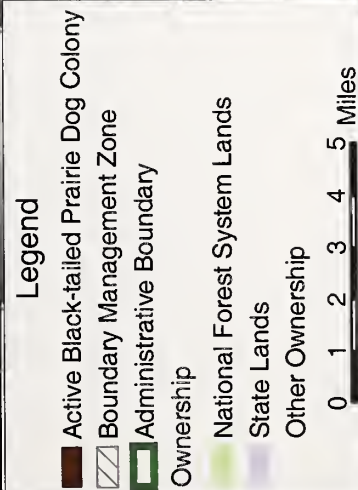




# Alternative Two (One Mile Boundary Management Zone) Oglala National Grassland



Vicinity Map

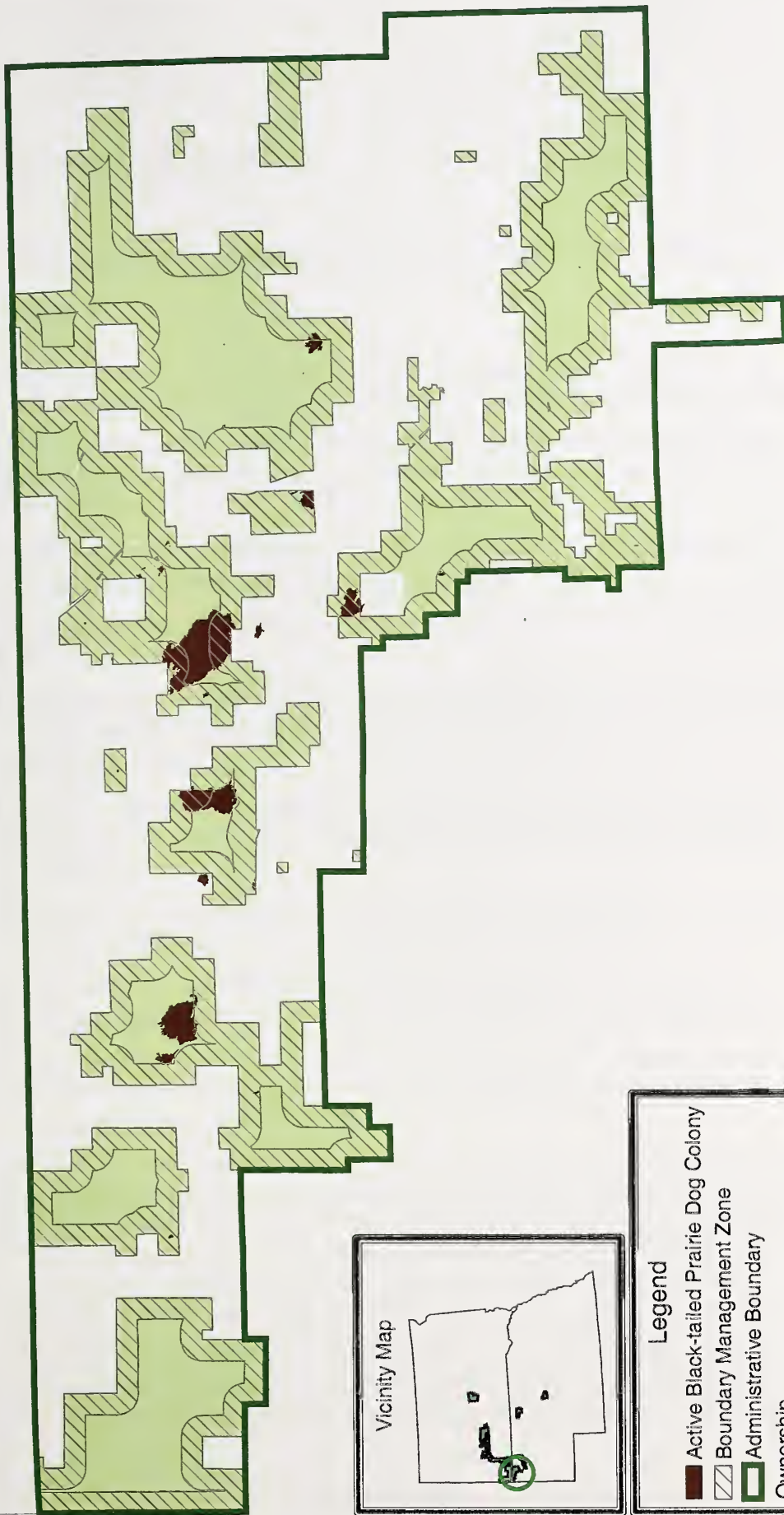








# Alternative Three (Half-Mile Boundary Management Zone) Oglala National Grassland



Vicinity Map



- Legend**
- Active Black-tailed Prairie Dog Colony
  - Boundary Management Zone
  - Administrative Boundary
  - Ownership
  - National Forest System Lands
  - State Lands
  - Other Ownership
- 0 1 2 3 4 5 Miles



# APPENDIX B

## IMPLEMENTATION PLAN

### BLACK-TAILED PRAIRIE DOG CONSERVATION AND MANAGEMENT

#### ALTERNATIVE 1

**Summary Description:** Prairie Dog Conservation Concurrent With Population Regulation and Management Through Non-Lethal Methods and Limited Rodenticide Use

**Conservation.** Current LRMP direction for prairie dog conservation is unchanged and implemented as funding, staffing and priorities allow. Conservation activities underway include but are not limited to:

- Expansion of the prairie dog colony complex in the Conata Basin black-footed ferret reintroduction area (Management Area 3.63),
- Prairie dog shooting closure in Conata Basin black-footed ferret reintroduction habitat,
- Identification and implementation of opportunities for landownership adjustment to facilitate prairie dog population expansion while reducing boundary management conflicts,
- Expansion of the prairie dog colony complex (Management Area 3.63) near Smithwick, South Dakota, as potential habitat for future black-footed ferret reintroductions,
- Establishment and maintenance of prairie dog colony complexes (conservation focus areas) on the Fort Pierre and Oglala National Grasslands,
- Live-trapping and relocation of prairie dogs for black-footed ferret recovery program and for accelerating prairie dog colony expansion in selected areas.

In addition to the above conservation activities, prairie dog shooting closures identified in the LRMP for ferret reintroduction habitat would be implemented in the Smithwick ferret habitat area (Management Area 3.63) in 2005.

The colony complexes mentioned above, one each on the Fort Pierre and Oglala National Grasslands, need to meet design criteria specified in the LRMP to help ensure long-term persistence of viable prairie dog populations on those areas. The complex criteria are a minimum of 1,000 acres in at least 10 colonies located no greater than 6 miles apart (inter-colony distance). These criteria closely follow recommendations presented in the Multi-State Conservation Plan for the Black-tailed Prairie Dog (Luce 1999 and 2003).

**Boundary Management.** LRMP direction to manage prairie dog populations using non-lethal management tools is implemented as funding, staffing and priorities allow. Non-lethal methods such as vegetation management through livestock grazing modifications



are tools of choice and implemented in selected sites to help regulate and manage prairie dog populations. Non-lethal methods are used along property boundaries to reduce colony establishment and expansion rates in these areas. For example, this may include the use of temporary fencing to help manage livestock grazing, including livestock removal, to create visual (vegetation) barriers along property boundaries. If suitable destination sites are available, live-trapping may be used in selected colonies along boundaries to remove and relocate prairie dogs. Identification and evaluation of opportunities for landownership adjustment to reduce prairie dog management conflicts with adjoining landowners continues as prescribed in the LRMP.

Limited use of rodenticide is prescribed and implemented for public health and safety risks and damage to facilities, such as rural residences. Although it has never been confirmed in the project area, a plague epizootic near a rural residence would certainly be considered a health and safety risk. The abundance of rattlesnakes in prairie dog colonies is currently a health and safety consideration when colonies expand into and around farm and ranch headquarters and rural residences. Recreational prairie dog shooting near farm and ranch headquarters is also a safety issue. All decisions regarding rodenticide use, including the amount and extent of rodenticide use, on the national grasslands in response to public health and safety risks would be made by the Forest Service after on-site evaluations.

**Project-Level Implementation.** There is no additional public disclosure or site-specific analysis requirements if the management tools identified above are applied within the criteria presented in the following table. Project-level implementation of these tools outside the criteria may require additional public disclosure and site-specific evaluation.

**TABLE**  
**Project-Level Implementation Criteria for Alternative 1**

<b>MANAGEMENT TOOL (AREA)</b>	<b>NEPA/NFMA COMPLIANCE</b>	<b>ESA COMPLIANCE</b>	<b>NHPA/PALEO COMPLIANCE</b>
<b>Rodenticide</b>			
All NFS Lands	Compliant if colony is presenting a public health or safety risk, causing damage to a facility, and 2% zinc phosphide grain bait is applied between 10/1 and 12/31	Compliant, additional consultation not required if outside Conata Basin ferret habitat	Not required
Conata Basin Ferret Habitat	See criteria above for "All NFS Lands"	Compliant if colony is unoccupied by ferrets. If occupied consult with FWS.	Not required
Smithwick Ferret Habitat	See criteria above for "All NFS Lands"	Compliant, additional consultation not required prior to FWS issuing a proposed rule for reintroduction	Not required
FPNG & ONG Colony Complexes	Compliant if complex of at least 1,000 acres is maintained or exceeded	Compliant, additional consultation not required	Not required
<b>Vegetation Management Through Livestock Grazing Coordination</b> (includes temporary fencing to help create visual vegetation barriers)			
All NFS Lands	Compliant if adjustments are made through annual operating plans	Compliant, additional consultation not required	Requires additional review if significant soil disturbance would occur
<b>Live-trapping</b>			
Ferret Habitat	Not required if under state and/or federal permits	Compliant, additional consultation not required	Not required
FPNG & ONG Colony Complexes	Not required if under state and/or federal permits	Not required	Not required
<b>Landownership Adjustment</b>			
All NFS Lands	Requires additional environmental analysis and public disclosure	Requires additional ESA consultation	Requires additional review

## IMPLEMENTATION PLAN

### BLACK-TAILED PRAIRIE DOG CONSERVATION AND MANAGEMENT

#### ALTERNATIVE 2

**Summary Description:** Prairie Dog Conservation Concurrent With Population Regulation and Management Through Non-Lethal Methods and Expanded Rodenticide Use Along Property Boundaries (1.0 Mile Boundary Management Zone)

**Conservation.** Some of the LRMP direction for prairie dog conservation continues to be implemented as funding, staffing and priorities allow. This direction includes but is not limited to:

- Maintain the prairie dog colony complex in the Conata Basin black-footed ferret reintroduction area (Management Area 3.63),
- Modified prairie dog shooting closure in Conata Basin black-footed ferret reintroduction habitat,
- Identification and implementation of opportunities for landownership adjustment to facilitate prairie dog population expansion.

The LRMP also prescribes development of black-footed ferret reintroduction habitat on the Buffalo Gap National Grassland near Smithwick, South Dakota. However, successful establishment of a prairie dog colony complex under this alternative that is large enough to support a ferret reintroduction in this area within the next 10 years would likely require conservation agreements for additional active colony acreage on adjoining lands.

**Boundary Management.** LRMP direction to manage prairie dog populations using non-lethal management tools is implemented as funding, staffing and priorities allow. Rodenticide is added under this alternative as a primary tool for use on prairie dog colonies that encroach onto adjoining agricultural lands. Encroachment occurs when a prairie dog colony on national grasslands expands to a point where unwanted colonization of adjoining land occurs. Rodenticide use could extend a maximum of one mile into national grasslands from private and tribal property boundaries. This does not apply to boundaries along state school lands, Badlands National Park and other federal lands. All rodenticide use on the national grasslands would be in response to complaints from adjoining landowners that can demonstrate colonization on their lands along property boundaries and that a national grassland colony is a significant contributor to the colonization. On the Buffalo Gap and Fort Pierre National Grasslands, the complaint process is initiated through the State of South Dakota. The appropriate response to each complaint involving a national grassland colony would be determined by the Forest Service after on-site evaluations and coordination with landowners, South Dakota Department of Agriculture and South Dakota Department of Game, Fish and Parks. Decisions not to use rodenticide may occur in situations involving private inholdings or small isolated tracts, especially in black-footed ferret reintroduction habitat and designated prairie dog colony complexes. Like Alternative 1, rodenticide is also used in



response to public health and safety risks and damage to facilities. This could occur along property boundaries or within interior areas of national grasslands.

Additional criteria apply on some areas before rodenticide use would be authorized. Rodenticide use in the Conata Basin black-footed ferret reintroduction area could only extend to a mile if minimum black-footed ferret population thresholds continue to be met. These thresholds, based on current information, indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population (Livieri and Perry 2005). If the minimum thresholds are not being met, rodenticide use would not occur or would be limited to less than a mile from adjoining lands. Rodenticide use on Oglala and Fort Pierre National Grasslands could only extend the specified distances if reasonable progress can be demonstrated in establishing the prairie dog colony complexes prescribed in the LRMP for both areas. Reasonable progress is achieved when long-term trends in active prairie dog colony acreage remain upward, when compared to the 1996–98 colony acreages used in the LRMP FEIS analyses.

Regulated shooting in the Conata Basin black-footed ferret habitat may be authorized in the boundary management zone if minimum ferret population thresholds continue to be met and the authorized level of incidental take, as specified in a Biological Opinion by the U.S. Fish and Wildlife Service for the Conata Basin black-footed ferret reintroduction is not likely to be exceeded. This would require a modification to the current shooting closure. The intent is to help reduce prairie dog populations along boundaries to reduce unwanted colonization of adjoining lands. Regulated shooting involves limiting the number of shooters and specifying season and shooting hours in selected colonies. It also includes the necessary enforcement and oversight. The shooting closure is retained for the interior portions of Conata Basin ferret habitat. Recreational prairie dog shooting outside occupied black-footed ferret reintroduction habitat continues under State regulatory authorities and helps reduce prairie dog populations in both interior and boundary colonies on national grasslands.

The shooting closure prescribed in the LRMP for black-footed ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, a shooting closure would not be implemented in this area until ferret reintroduction is proposed or scheduled. Forest Service defers decisions on prairie dog shooting restrictions on national grasslands outside active black-footed ferret reintroduction habitat to the states.

Non-lethal methods would be used concurrently, where appropriate, with rodenticide along property boundaries to augment long-term effectiveness of the rodenticide. For example, this may include the use of temporary fencing to help manage livestock grazing, including livestock removal, in rodenticide zones to create visual (vegetation) barriers. If more long-term adjustments are needed in livestock grazing management to facilitate the effectiveness of prairie dog management, additional environmental analyses and public disclosure would be conducted as appropriate. Use of visual and physical prairie dog barriers may also be used in selected areas.

Non-lethal tools under this alternative also include landownership adjustment, financial incentives and conservation easements. Rapid assessments to evaluate opportunities for

landownership adjustment in problematic complaint areas would be scheduled and completed as complaint areas are identified, with efforts being focused in black-footed ferret habitat and the designated prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands. Progress with these efforts would be reported in the annual LRMP Monitoring and Evaluation Report. Financial incentives and conservation easements would involve government agencies and private organizations working with willing landowners to find ways of conserving prairie dogs on their lands and national grasslands.

Prairie dog rodenticide along property boundaries is not used under this alternative on the Nebraska National Forest, Bessey Ranger District. Only non-lethal tools would be considered to address adjoining landowner complaints about encroachment. The same applies to the Nebraska National Forest, Pine Ridge Ranger District, and Samuel R. McKelvie National Forest. Both of these areas currently do not support prairie dog colonies, but if colonies establish in the future along property boundaries, only non-lethal methods would be considered to help address adjoining landowner complaints.

**Project-Level Implementation.** The full suite of wildlife damage management tools identified above would be applied under a prairie dog management plan. The successful application of these tools are highly dependent on effective and timely monitoring of prairie dog colony distributions and dynamics. In the Conata Basin ferret reintroduction habitat, monitoring of prairie dog densities and ferret populations and survival is also critically important for the prairie dog adaptive management plan to be effective. The prairie dog management tools are:

- Financial incentives, conservation agreements, or landownership adjustments are the initial tools of choice to resolve prairie dog problems in complaint areas along the following emphasis boundary areas: 1) inholdings in MA 3.63; 2) lands adjoining MA 3.63 with chronic unwanted colonization; 3) inholdings in the Oglala and Fort Pierre prairie dog colony complex areas; and 4) lands adjoining the colony complex prairie dog colonies. These solutions may involve other government agencies or private organizations that facilitate financial incentives or compensation, conservation agreements or conservation easements with willing landowners.
- If the initial tools of choice do not present a viable and timely solution for a boundary complaint area, rodenticide and vegetation management are then considered primary and applied as appropriate. Rodenticide use should be considered concurrent with a vegetation management evaluation and if appropriate, modifications in livestock grazing strategies.
- Live-trapping to remove prairie dogs for the black-footed ferret recovery program, or relocation to a more desirable location is a secondary tool for consideration in the Conata Basin ferret habitat and designated prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands. Because of the expense and difficulty in finding suitable prairie dog relocation sites, use of live-trapping is expected to be very limited.



- Regulated shooting is another secondary tool to consider in selected colonies along the boundaries of the Conata Basin ferret reintroduction area.
- Visual or physical barriers have considerable non-lethal appeal but only have limited effectiveness and would be utilized primarily in reoccurring complaint areas.
- During drought, implement light livestock grazing intensities and/or other grazing modifications in complaint areas as appropriate. During severe or extended droughts, remove livestock from the national grasslands in complaint areas to help reduce successful prairie dog dispersal and colony expansion and establishment. However, it needs to be recognized that the effects of these drought contingencies on the population recovery rate in recently poisoned colonies within complaint areas are difficult to accurately predict. Repeat rodenticide applications may be needed to prevent eventual population recovery in recently poisoned colonies.

There is no additional public disclosure or site-specific analysis requirements if the management tools identified above are applied within the criteria presented in the following Table. Project-level implementation of these tools outside the criteria may require additional public disclosure and site-specific evaluation.

**TABLE**  
**Project-Level Implementation Criteria for Alternative 2**

<b>MANAGEMENT TOOL (AREA)</b>	<b>NEPA/NFMA COMPLIANCE</b>	<b>ESA COMPLIANCE</b>	<b>NHPA/PALEO COMPLIANCE</b>
<b>Rodenticide</b>			
All NFS Lands	<p>Compliant if colony is presenting a public health or safety risk, causing damage to a facility, and 2% zinc phosphide grain bait is applied between 10/1 and 1/31</p> <p>Compliant if colony is within designated boundary management zones; encroaching or would likely encroach on adjoining lands in the near future; and 2% zinc phosphide grain bait is applied between 10/1 and 1/31</p>	Compliant, additional consultation not required if outside Conata Basin ferret habitat and NEPA compliant	Not required



<b>MANAGEMENT TOOL (AREA)</b>	<b>NEPA/NFMA COMPLIANCE</b>	<b>ESA COMPLIANCE</b>	<b>NHPA/PALEO COMPLIANCE</b>
Conata Basin Ferret Habitat	See criteria above for "All NFS Lands"	Compliant if monitoring indicates that the ferret family rating of 200 is maintained or exceeded  Compliant if colony is unoccupied by ferrets. If occupied, consult with FWS.	Not required
Smithwick Ferret Habitat	See criteria above for "All NFS Lands"	No additional consultation needed prior to FWS issuing a proposed rule for reintroduction	Not required
<b>Shooting</b>			
Conata Basin Ferret Habitat	Compliant if in boundary management zones	Compliant, additional consultation not required if in boundary management zones	Not required
Smithwick Ferret Habitat	Compliant	Compliant, additional consultation not required	Not required
All Other NFS Lands	Not required (defer to states)	Not required	Not required
<b>Vegetation Management Through Livestock Grazing Coordination (includes temporary fencing to help create visual vegetation barriers)</b>			
All NFS Lands	Compliant if adjustments are made through annual operating plans	Compliant, additional consultation not required	Requires additional review if significant soil disturbance would occur
<b>Other Visual/Physical Barriers</b>			
All NFS Lands	May require additional environmental analysis and public disclosure if significant soil disturbance would occur	Compliant, additional consultation not required	Requires additional review if significant soil disturbance would occur
<b>Live-trapping</b>			
All NFS Lands	Compliant if under state and/or federal permit	Compliant if under state and/or federal permit	Not required

<b>MANAGEMENT TOOL (AREA)</b>	<b>NEPA/NFMA COMPLIANCE</b>	<b>ESA COMPLIANCE</b>	<b>NHPA/PALEO COMPLIANCE</b>
<b>Financial Incentives/Conservation Easements</b>			
All NFS Lands	This would be between other agencies, organizations and willing landowners. Therefore, there are no NEPA/NFMA regulatory requirements for FS.	Not required	Not required
<b>Landownership Adjustment</b>			
All NFS Lands	Requires additional environmental analysis and public disclosure	Requires additional ESA consultation	Requires additional review

## IMPLEMENTATION PLAN

### BLACK-TAILED PRAIRIE DOG CONSERVATION AND MANAGEMENT

#### ALTERNATIVE 3

**Summary Description:** Prairie Dog Conservation Concurrent With Population Regulation and Management Through Non-Lethal Methods and Expanded Rodenticide Use Along Property Boundaries (0.25 and 0.5 Mile Boundary Management Zones)

**Conservation.** Most LRMP direction for prairie dog conservation is implemented as funding, staffing and priorities allow. Modifications are made to some conservation measures prescribed in the LRMP including the shooting and rodenticide prohibitions in black-footed ferret reintroduction habitat (Management Areas 3.63).

Priority conservation activities implemented under this alternative include:

- Expansion of the prairie dog colony complex in the Conata Basin black-footed ferret reintroduction habitat (Management Area 3.63),
- Identification and implementation of opportunities for landownership adjustment to facilitate prairie dog population expansion,
- Modified prairie dog shooting closure in Conata Basin black-footed ferret reintroduction habitat,
- Focus on the establishment of prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands,
- Third party solutions with willing landowners.

As described under Alternative 2, the LRMP also prescribes development of black-footed ferret reintroduction habitat on the Buffalo Gap National Grassland near Smithwick, South Dakota. Under this alternative, successful establishment of a prairie dog colony complex that is large enough to support a ferret reintroduction in this area may take more than 10 years or may require conservation agreements for additional active colony acreage on adjoining lands.

The colony complexes mentioned above, one each on the Fort Pierre and Oglala National Grasslands, need to meet design criteria specified in the LRMP to help ensure long-term persistence of viable prairie dog populations on those areas. The complex criteria are a minimum of 1,000 acres in at least 10 colonies located no greater than 6 miles apart (inter-colony distance). These criteria closely follow recommendations presented in the Multi-State Conservation Plan for the Black-tailed Prairie Dog (Luce 1999 and 2003).

**Boundary Management.** LRMP direction to manage prairie dog populations using non-lethal management tools is implemented as funding, staffing and priorities allow. Rodenticide is added under this alternative as a primary tool for use on prairie dog colonies that encroach onto adjoining agricultural lands. Encroachment is defined as a national grassland colony that extends across a private or tribal property boundary or would likely cross a property boundary within 1 to 2 years. By stopping colonies just



before they encroach on an adjoining landowner, the number of chronic problem areas likely to develop and the amount of rodenticide and other management actions requested and needed in the future should be substantially reduced. Rodenticide use would be to prevent imminent encroachment as described above or in response to complaints from adjoining landowners that can demonstrate colonization on their lands along property boundaries and that a national grassland colony is a significant contributor to the colonization. On the Buffalo Gap and Fort Pierre National Grasslands, the complaint process is initiated through the State of South Dakota. The appropriate response to each complaint involving a national grassland colony would be determined by the Forest Service after on-site evaluations and coordination with landowners and state agencies. Decisions not to use rodenticide may occur in situations involving private inholdings or small isolated tracts, especially in black-footed ferret reintroduction habitat and designated prairie dog colony complexes. Like Alternatives 1 and 2, rodenticide is also used in response to public health and safety risks and damage to facilities. This could occur along property boundaries or within interior areas of national grasslands and forests.

Landownership and prairie dog distribution patterns are substantially different between the Fort Pierre National Grassland and the Buffalo Gap and Oglala National Grasslands, so guidance on rodenticide use is not consistent across the national grasslands. This is necessary to balance the need for prairie dog conservation with concerns of adjoining landowners. Boundary management zones on the Buffalo Gap and Oglala National Grasslands where rodenticide and other management tools could be used to reduce unwanted colonization of adjoining lands extend a maximum of 0.5 miles from private and tribal property boundaries into the national grasslands. The boundary management zone on the Fort Pierre National Grassland is set at a lesser width of 0.25 miles (maximum) to avoid elimination of most colonies. Boundary management zones are set up only along private and tribal lands and not along state school lands, Badlands National Park or other federal lands.

Unique circumstances and reoccurring problems may warrant exceeding the specified distances up to a maximum of one mile, but exceptions would only be made if additional environmental analyses and public disclosure occur. Rodenticide use in the Conata Basin black-footed ferret reintroduction area could only extend to a mile if minimum black-footed ferret population thresholds continue to be met. These thresholds, based on current information, indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population. If the minimum thresholds are not being met, rodenticide use would not occur or would be limited to less than a mile from adjoining lands. Rodenticide use on Oglala and Fort Pierre National Grasslands could only extend beyond the specified distances if reasonable progress can be demonstrated in establishing the prairie dog colony complexes prescribed in the LRMP for both areas. Reasonable progress is achieved when long-term trends in active prairie dog colony acreage remain upward, when compared to the 1996–98 colony acreages used in the LRMP FEIS analyses.

Regulated shooting in the Conata Basin black-footed ferret habitat may be authorized in the boundary management zone if minimum ferret population thresholds continue to be met and the authorized level of incidental take, as specified in a Biological Opinion by

the U.S. Fish and Wildlife Service for the Conata Basin black-footed ferret reintroduction, is not likely to be exceeded. This would require a modification to the current shooting closure. The intent is to help regulate prairie dog populations along boundaries to reduce unwanted impacts on adjoining lands. Regulated shooting involves limiting number of shooters and specifying season and shooting hours in selected colonies. It also includes the necessary enforcement and oversight. The shooting closure is retained for the interior portions of Conata Basin ferret habitat. Recreational prairie dog shooting outside occupied black-footed ferret reintroduction habitat continues under State regulatory authorities and helps regulate prairie dog populations in both interior and boundary colonies on national grasslands.

The shooting closure prescribed in the LRMP for black-footed ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, a shooting closure would not be implemented in this area until ferret reintroduction is proposed or scheduled. Forest Service defers decisions on prairie dog shooting restrictions on national grasslands outside active black-footed ferret reintroduction habitat to the states.

Non-lethal methods would be used concurrently, where appropriate, with rodenticide along property boundaries to augment long-term effectiveness of rodenticides. For example, this may include the use of temporary fencing to help manage livestock grazing, including livestock removal, in boundary management zones to create visual (vegetation) barriers. If more long-term adjustments are needed in livestock grazing management to facilitate the effectiveness of prairie dog management, additional environmental analyses and public disclosure may be conducted as appropriate. Use of visual and physical prairie dog barriers may also be used in selected areas.

Non-lethal management tools also include landownership adjustment and third party solutions. Rapid assessments to evaluate opportunities for landownership adjustment in complaint areas would be prioritized and completed as complaint areas are identified, with land ownership adjustments in black-footed ferret habitat and the designated prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands being highest priorities. Progress in landownership adjustment and other third party solutions would be reported in the annual LRMP Monitoring and Evaluation Report. Third party solutions involve other government agencies or private organizations that provide innovative solutions to help conserve prairie dogs on their lands and national grasslands. These solutions include but are not limited to financial incentives, conservation agreements and easements with willing landowners, and other tools identified in the national black-tailed prairie dog conservation assessment and strategy (Van Pelt 1999).

Prairie dog rodenticide along property boundaries is not used under this alternative on the Nebraska National Forest, Bessey Ranger District. Only non-lethal tools would be considered to address adjoining landowner complaints about encroachment. The same applies to the Nebraska National Forest, Pine Ridge Ranger District, and Samuel R. McKelvie National Forest. Both of these areas currently do not support prairie dog colonies, but if colonies establish in the future along property boundaries, only non-lethal methods would be considered to help address adjoining landowner complaints.



**Project-Level Implementation.** The full suite of wildlife damage management tools identified above would be applied under an adaptive management plan. The successful application of this plan is highly dependent on effective and timely monitoring of prairie dog colony distributions and dynamics. In the Conata Basin ferret reintroduction habitat, monitoring of prairie dog densities and ferret populations and survival is also critically important for the prairie dog adaptive management plan to be effective. The adaptive management tools are:

- Third party solutions and landownership adjustments are the initial tools of choice to resolve prairie dog problems in complaint areas along the following emphasis boundary areas: 1) inholdings in MA 3.63; 2) lands adjoining MA 3.63 with chronic unwanted colonization; 3) inholdings in the Oglala and Fort Pierre prairie dog colony complex areas; and 4) lands adjoining the colony complex prairie dog colonies. Third party solutions involve other government agencies or private organizations that facilitate financial incentives or compensation, conservation agreements or conservation easements with willing landowners.
- If the initial tools of choice do not present a viable and timely solution for a boundary complaint area, rodenticide and vegetation management are then considered primary and applied as appropriate. Rodenticide use should be considered concurrent with a vegetation management evaluation and if appropriate, modifications in livestock grazing strategies.
- Live-trapping to remove prairie dogs for the black-footed ferret recovery program, or relocation to a more desirable location is a secondary tool for consideration in the Conata Basin ferret habitat and designated prairie dog colony complexes on the Fort Pierre and Oglala National Grasslands. Because of the expense and difficulty in finding suitable prairie dog relocation sites, use of live-trapping is expected to be very limited.
- Regulated shooting is another secondary tool to consider in selected colonies along the boundaries of the Conata Basin ferret reintroduction area.
- Visual or physical barriers have considerable non-lethal appeal but only have limited effectiveness and would be utilized primarily in reoccurring complaint areas.
- During drought, implement light livestock grazing intensities and/or other grazing modifications in complaint areas as appropriate. During severe or extended droughts, remove livestock from the national grasslands in complaint areas to help reduce successful prairie dog dispersal and colony expansion and establishment.

There is no additional public disclosure or site-specific analysis requirements if the management tools identified above are applied within the criteria presented in the following Table. Project-level implementation of these tools outside the criteria may require additional public disclosure and site-specific evaluation.



**TABLE**  
**Project-Level Implementation Criteria for Alternative 3**

<b>MANAGEMENT TOOL (AREA)</b>	<b>NEPA/NFMA COMPLIANCE</b>	<b>ESA COMPLIANCE</b>	<b>NHPA/PALEO COMPLIANCE</b>
<b>Rodenticide</b>			
All NFS Lands	<p>Compliant if colony is presenting a public health or safety risk, causing damage to a facility, and 2% zinc phosphide grain bait is applied between 10/1 and 1/31</p> <p>Compliant if colony is within designated boundary management zone; encroaching or would likely encroach on adjoining lands in the near future; and 2% zinc phosphide grain bait is applied between 10/1 and 1/31</p>	Compliant if outside Conata Basin ferret habitat and NEPA compliant	Not required
Conata Basin Ferret Habitat	See criteria above for "All NFS Lands"	<p>Compliant if monitoring indicates that the ferret family rating of 200 is maintained or exceeded</p> <p>Compliant if colony is unoccupied by ferrets. If occupied consult with FWS.</p>	Not required
Smithwick Ferret Habitat	See criteria above for "All NFS Lands"	No additional consultation needed prior to FWS issuing a proposed rule for reintroduction	Not required
FPNG & ONG Prairie Dog Colony Complex	Compliant if complex of at least 1000 acres is maintained or exceeded	Compliant, additional consultation not required	Not required
<b>Shooting</b>			
Conata Basin Ferret Habitat	Compliant if within designated boundary management zones and regulated	Compliant if within designated boundary management zones and regulated	Not required
Smithwick Ferret Habitat	Not required (defer to states)	<p>Not required (defer to states)</p> <p>Consultation required once ferrets are proposed for release</p>	Not required

<b>MANAGEMENT TOOL (AREA)</b>	<b>NEPA/NFMA COMPLIANCE</b>	<b>ESA COMPLIANCE</b>	<b>NHPA/PALEO COMPLIANCE</b>
FPNG & ONG Prairie Dog Colony Complex	Not required (defer to states)	Not required (defer to states)	Not required
All Other NFS Lands	Not required (defer to states)	Not required (defer to states)	Not required
<b>Vegetation Management Through Livestock Grazing Coordination (includes temporary fencing to help create visual vegetation barriers)</b>			
All NFS Lands	Compliant if adjustments are made through annual operating plans	Compliant, additional consultation not required	Requires additional review if significant soil disturbance would occur
<b>Other Visual/Physical Barriers</b>			
All NFS Lands	Requires additional environmental analysis and public disclosure if significant soil disturbance would occur	Compliant, additional consultation not required	Requires additional review if significant soil disturbance would occur
<b>Live-trapping</b>			
All NFS Lands	Compliant if under state and/or federal permit	Compliant if under state and/or federal permit	Not required
<b>Third Party Solutions</b>			
All NFS Lands	Forest Service could assist but this does not require an agency decision. Therefore, there are no NEPA/NFMA regulatory requirements.	Forest Service could assist but this does not require an agency decision. Therefore, there are no ESA consultation requirements.	Forest Service could assist but this does not require an agency decision. Also, this does not involve any soil disturbing activities. Therefore, there are no additional review requirements.
<b>Landownership Adjustment</b>			
All NFS Lands	Requires additional environmental analysis and public disclosure	Requires additional ESA consultation	Requires additional review





# APPENDIX C

## LRMP AMENDMENTS

The following tables identify current LRMP direction that is proposed to be deleted (left column) under Alternatives 2 and 3. This current direction will be amended, replaced in whole, or have no replacement direction (right column).

### ALTERNATIVE 2

Item #	Delete:	Amend or Replace With:
#1	<b>Chapter 1, F-2.</b> Modify livestock grazing practices as needed to reduce adverse impacts of drought on food and cover for prairie grouse and other wildlife. <b>Standard</b>	<b>Chapter 1, F-2 (amended).</b> Modify livestock grazing practices as needed to reduce adverse impacts of drought on food and cover on wildlife, as determined through monitoring and evaluation of management indicator species, including plains sharp-tailed grouse, greater prairie chicken, greater sage grouse, and black-tailed prairie dog. Livestock grazing modifications would be used in selected areas to modify habitat suitability for prairie dogs and reduce unwanted colonization onto adjoining agricultural lands. <b>Guideline</b>
#2	<b>Chapter 1, F-21.</b> Any net loss of suitable black-footed ferret habitat as a result of prairie dog poisoning or development of new facilities within colonies shall be replaced within the year. This is based on the amount of suitable habitat available prior to prairie dog dispersal in the year of the poisoning or development. <b>Standard</b>	Standard removed with no replacement (this standard will be addressed in the following amendment found on page C-5).  <b>Chapter 3, Management Area 3.63, General – 1 (amended).</b>

## ALTERNATIVE 2

Item #	Delete:	Amend or Replace With:
#3	<p><b>Chapter 1, F-42.</b> Restrict prairie dog shooting where significant risks have been identified for other wildlife species or where shooting is preventing or slowing a desired prairie dog population expansion. Restrictions shall be year-long or seasonal, and dates of seasonal restrictions shall vary depending on the species at risk. Coordinate and consult with the appropriate wildlife agencies prior to implementation of restrictions. <b>Guideline</b></p>	<p>Guideline removed with no replacement. (defer to state authority for regulatory actions outside black-footed ferret habitat)</p>
#4	<p><b>Chapter 1, H-1.</b> 1. Limit the use of rodenticides (grain baits) for reducing prairie dog populations to the following situations:</p> <ul style="list-style-type: none"> <li>▪ Public health and safety risks occur in the immediate area,</li> <li>▪ Damage to private and public facilities, such as cemeteries and residences. <b>Standard</b></li> </ul>	<p><b>Chapter 1, H-1 (amended).</b> 1. Limit the use of rodenticides (grain baits) for reducing prairie dog populations to the following situations:</p> <ul style="list-style-type: none"> <li>▪ Public health and safety risks occur in the immediate area,</li> <li>▪ Damage to private and public facilities, such as cemeteries and residences.</li> <li>▪ To respond to unwanted prairie dog colonization on adjoining agricultural lands, consistent with the LRMP Implementation Plan for Black-tailed Prairie Dog Conservation and Management and in coordination with the States. <b>Standard</b></li> </ul>

## ALTERNATIVE 2

Item #	Delete:	Amend or Replace With:
#5	<p><b>Chapter 1, H-2.</b> Consult state-wide prairie dog conservation strategies for additional guidance on the appropriate response to complaints of unwanted prairie dog colonization on adjoining agricultural lands (private, state, and tribal lands). <b>Guideline</b></p>	<p><b>Chapter 1, H-2 (amended).</b> Determine the appropriate response to complaints of unwanted colonization on adjoining agricultural lands in coordination with the States and as established in the LRMP Implementation Plan for Black-tailed Prairie Dog Conservation and Management. A suite of lethal and non-lethal tools would be used to reduce unwanted colonization of adjoining agricultural lands including:</p> <ul style="list-style-type: none"> <li>• Rodenticide,</li> <li>• Shooting,</li> <li>• Vegetation management through livestock grazing coordination (includes vegetative zones),</li> <li>• Physical and visual barriers,</li> <li>• Landownership adjustment,</li> <li>• Live-trapping for black-footed ferret recovery program or relocation,</li> <li>• Financial incentives <b>Guideline</b></li> </ul>
#6	<p><b>Chapter 1, H-4.</b> Prohibit use of rodenticides (above-ground grain baits) for reducing prairie dog populations outside the period October 1 to December 31 to reduce risks to migratory birds. To reduce risk to other wildlife, do not use burrow fumigants in prairie dog colonies. <b>Standard</b></p>	<p><b>Chapter 1, H-4 (amended).</b> Prohibit use of rodenticides (above-ground grain baits) for reducing prairie dog populations outside the period October 1 to January 31 to reduce risks to migratory birds. To reduce risk to other wildlife, do not use burrow fumigants in prairie dog colonies. <b>Standard</b> <i>(Note: Current pesticide application label allows use from July 1 to January 31)</i></p>



## ALTERNATIVE 2

Item #	Delete:	Amend or Replace With:																														
#7	<b>Chapter 2, Wall Southeast Geographic Area Management Area Prescription Allocation</b>	<b>Chapter 2, Wall Southeast Geographic Area Management Area Prescription Allocation</b>																														
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#8	<b>Chapter 2, Fort Pierre National Grassland, Geographic Area Direction – Objectives, Wildlife, Fish and Rare Plants –1. Black-tailed Prairie Dog</b> <ul style="list-style-type: none"><li>To increase prairie dog populations and habitat for associated species, establish one or more prairie dog colony complexes in the northeast portion (Sand and Timber Creek drainages) of this geographic area over the next 10 to 15 years. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private and tribal, may be considered part of a complex. <b>Objective</b></li></ul>	Objective removed with no replacement (colony complex meeting specified criteria is unattainable under Alternative 2)																														

## ALTERNATIVE 2

Item #	Delete:	Amend or Replace With:
#9	<p><b>Chapter 2, Oglala National Grassland, Geographic Area Direction – Objectives, Wildlife, Fish and Rare Plants –1. Black-tailed Prairie Dog</b></p> <ul style="list-style-type: none"> <li>• To help increase prairie dog populations and habitat for associated species, establish a prairie dog colony complex in the geographic area over the next 10 to 15 years. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private, may be considered part of a complex.</li> </ul> <p><b>Objective</b></p>	<p>Objective removed with no replacement (colony complex meeting specified criteria is unattainable under Alternative 2)</p>
#10	<p><b>Chapter 3, Management Area 3.63, General – 1.</b> Authorize only those uses and activities that do not reduce the suitability of the area as black-footed ferret reintroduction habitat. <b>Standard</b></p>	<p><b>Chapter 3, Management Area 3.63, General – 1 (amended).</b> Authorize only those uses and activities in the Conata Basin reintroduction area that do not reduce habitat below the level needed to support a long-term sustainable black-footed ferret population.</p> <p>Until habitat is available to support a long-term sustainable black-footed ferret population in the Smithwick reintroduction habitat, do not authorize uses and activities that would prevent annual increases in the prairie dog population. When ferrets are eventually released by the U.S. Fish and Wildlife Service, follow the same direction described above for the Conata Basin area. <b>Standard</b></p>
#11	<p><b>Chapter 3, Management Area 3.63 General - 2.</b> Manage all prairie dog colonies within this Management Area as though they were occupied by black-footed ferrets, and apply all Standards and Guidelines as though black-footed ferrets occupy all colonies. <b>Standard</b></p>	<p>Standard removed with no replacement. (This is a redundant standard, and other black-footed ferret occupancy standards have been changed).</p>

## ALTERNATIVE 2

Item #	Delete:	Amend or Replace With:
#12	<p><b>Chapter 3, Management Area 3.63 Fish and Wildlife-1.</b> Use of rodenticides in a colony to reduce prairie dog populations may occur only after consultation and concurrence of the U.S. Fish and Wildlife Service. The conditions when prairie dog poisoning may be authorized are presented in Chapter 1. <b>Standard</b></p>	<p><b>Chapter 3, Management Area 3.63 Fish and Wildlife - 1 (amended).</b> Use of rodenticides in a colony to reduce prairie dog populations may occur only after consultation and concurrence of the U.S. Fish and Wildlife Service. <b>Standard</b></p>
#13	<p><b>Chapter 3, Management Area 3.63 Recreation - 1.</b> To help expand and maintain suitable black-footed ferret habitat, prohibit prairie dog shooting. Coordination and consultation with the state wildlife agency will occur prior to any Forest Service actions regarding prairie dog shooting restrictions. <b>Standard</b></p>	<p><b>Chapter 3, Management Area 3.63 Recreation - 1 (amended).</b> To help expand and maintain suitable and secure black-footed ferret habitat in the Conata Basin reintroduction area, prohibit prairie dog shooting. However, regulated shooting may be allowed in selected areas along property boundaries to help reduce unwanted colonization of adjoining agricultural lands. Apply this same direction to the Smithwick reintroduction habitat once ferrets are released into the area. Coordination with the state wildlife agency would occur prior to any Forest Service actions regarding prairie dog shooting closures. <b>Standard</b></p>



## ALTERNATIVE 3

Item #	Delete:	Amend or Replace With:
#14	<b>Chapter 1, F-2.</b> Modify livestock grazing practices as needed to reduce adverse impacts of drought on food and cover for prairie grouse and other wildlife. <b>Standard</b>	<b>Chapter 1, F-2 (amended).</b> Modify livestock grazing practices as needed to reduce adverse impacts of drought on food and cover on wildlife, as determined through monitoring and evaluation of management indicator species, including plains sharp-tailed grouse, greater prairie chicken, greater sage grouse, and black-tailed prairie dog. Livestock grazing modifications would be used in selected areas to modify habitat suitability for prairie dogs and reduce unwanted colonization onto adjoining agricultural lands. <b>Guideline</b>
#15	<b>Chapter 1, F-21.</b> Any net loss of suitable black-footed ferret habitat as a result of prairie dog poisoning or development of new facilities within colonies shall be replaced within the year. This is based on the amount of suitable habitat available prior to prairie dog dispersal in the year of the poisoning or development. <b>Standard</b>	Standard removed with no replacement (this standard will be addressed in the following amendment found on page C-10).  <b>Chapter 3, Management Area 3.63, General – 1 (amended).</b>
#16	<b>Chapter 1, F-42.</b> Restrict prairie dog shooting where significant risks have been identified for other wildlife species or where shooting is preventing or slowing a desired prairie dog population expansion. Restrictions shall be year-long or seasonal, and dates of seasonal restrictions shall vary depending on the species at risk. Coordinate and consult with the appropriate wildlife agencies prior to implementation of restrictions. <b>Guideline</b>	Guideline removed with no replacement (defer to state authority for regulatory actions outside black-footed ferret habitat)

## ALTERNATIVE 3

Item #	Delete:	Amend or Replace With:
#17	<p><b>Chapter 1, H-1.</b> 1. Limit the use of rodenticides (grain baits) for reducing prairie dog populations to the following situations:</p> <ul style="list-style-type: none"> <li>▪ Public health and safety risks occur in the immediate area,</li> <li>▪ Damage to private and public facilities, such as cemeteries and residences. <b>Standard</b></li> </ul>	<p><b>Chapter 1, H-1 (amended).</b> 1. Limit the use of rodenticides (grain baits) for reducing prairie dog populations to the following situations:</p> <ul style="list-style-type: none"> <li>▪ Public health and safety risks occur in the immediate area,</li> <li>▪ Damage to private and public facilities, such as cemeteries and residences.</li> <li>▪ To respond to unwanted prairie dog colonization on adjoining agricultural lands, consistent with the LRMP Implementation Plan for Black-tailed Prairie Dog Conservation and Management and in coordination with the States. <b>Standard</b></li> </ul>
#18	<p><b>Chapter 1, H-2.</b> Consult state-wide prairie dog conservation strategies for additional guidance on the appropriate response to complaints of unwanted prairie dog colonization on adjoining agricultural lands (private, state, and tribal lands). <b>Guideline</b></p>	<p><b>Chapter 1, H-2 (amended).</b> Determine the appropriate response to complaints of unwanted colonization on adjoining agricultural lands in coordination with the States and as established in the LRMP Implementation Plan for Black-tailed Prairie Dog Conservation and Management. A suite of lethal and non-lethal tools would be used to reduce unwanted colonization of adjoining agricultural lands including:</p> <ul style="list-style-type: none"> <li>• Rodenticide,</li> <li>• Shooting,</li> <li>• Vegetation management through livestock grazing coordination (includes vegetation zones),</li> <li>• Physical and visual barriers,</li> <li>• Landownership adjustment,</li> <li>• Live-trapping for black-footed ferret recovery program or relocation,</li> <li>• Third party solutions (financial incentives/compensation, conservation agreements, conservation easements)</li> </ul> <p><b>Guideline</b></p>

## ALTERNATIVE 3

Item #	Delete:	Amend or Replace With:																														
#19	<p><b>Chapter 1, H-4.</b> Prohibit use of rodenticides (above-ground grain baits) for reducing prairie dog populations outside the period October 1 to December 31 to reduce risks to migratory birds. To reduce risk to other wildlife, do not use burrow fumigants in prairie dog colonies.</p> <p><b>Standard</b></p>	<p><b>Chapter 1, H-4 (amended).</b> Prohibit use of rodenticides (above-ground grain baits) for reducing prairie dog populations outside the period October 1 to January 31 to reduce risks to migratory birds. To reduce risk to other wildlife, do not use burrow fumigants in prairie dog colonies.</p> <p><b>Standard</b> <i>(Note: Current pesticide application label allows use from July 1 to January 31)</i></p>																														
#20	<p><b>Chapter 2, Wall Southeast Geographic Area Management Area Prescription Allocation</b></p> <table> <tr> <th>Number</th><th>Prescription</th><th>Acres</th></tr> <tr> <td>1.31</td><td>Backcountry Recreation Nonmotorized</td><td>12,030</td></tr> <tr> <td>3.63</td><td>Black-footed Ferret Reintroduction Habitat</td><td>5,130</td></tr> <tr> <td>3.64</td><td>Special Plant and Wildlife Habitat</td><td>1,160</td></tr> <tr> <td>6.1</td><td>Rangeland with Broad Resource Emphasis</td><td>76,170</td></tr> </table> <p>See Appendix A – Maps, Proposed change to management area prescription 3.63 Black-footed ferret Reintroduction Habitat.</p>	Number	Prescription	Acres	1.31	Backcountry Recreation Nonmotorized	12,030	3.63	Black-footed Ferret Reintroduction Habitat	5,130	3.64	Special Plant and Wildlife Habitat	1,160	6.1	Rangeland with Broad Resource Emphasis	76,170	<p><b>Chapter 2, Wall Southeast Geographic Area Management Area Prescription Allocation</b></p> <table> <tr> <th>Number</th><th>Prescription</th><th>Acres</th></tr> <tr> <td>1.31</td><td>Backcountry Recreation Nonmotorized</td><td>12,030</td></tr> <tr> <td>3.63</td><td>Black-footed Ferret Reintroduction Habitat</td><td>0</td></tr> <tr> <td>3.64</td><td>Special Plant and Wildlife Habitat</td><td>1,160</td></tr> <tr> <td>6.1</td><td>Rangeland with Broad Resource Emphasis</td><td>81,300</td></tr> </table> <p>See Appendix A – Maps, Proposed change to management area prescription 3.63 Black-footed ferret Reintroduction Habitat.</p>	Number	Prescription	Acres	1.31	Backcountry Recreation Nonmotorized	12,030	3.63	Black-footed Ferret Reintroduction Habitat	0	3.64	Special Plant and Wildlife Habitat	1,160	6.1	Rangeland with Broad Resource Emphasis	81,300
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## ALTERNATIVE 3

Item #	Delete:	Amend or Replace With:
#21	<p><b>Chapter 3, Management Area 3.63, General – 1.</b> Authorize only those uses and activities that do not reduce the suitability of the area as black-footed ferret reintroduction habitat. <b>Standard</b></p>	<p><b>Chapter 3, Management Area 3.63, General – 1 (amended).</b> Authorize only those uses and activities in the Conata Basin reintroduction area that do not reduce habitat below the level needed to support a long-term sustainable black-footed ferret population.</p> <p>Until habitat is available to support a long-term sustainable black-footed ferret population in the Smithwick reintroduction habitat, do not authorize uses and activities that would prevent annual increases in the prairie dog population. When ferrets are eventually released by the U.S. Fish and Wildlife Service, follow the same direction described above for the Conata Basin area. <b>Standard</b></p>
#22	<p><b>Chapter 3, Management Area 3.63 General - 2.</b> Manage all prairie dog colonies within this Management Area as though they were occupied by black-footed ferrets, and apply all Standards and Guidelines as though black-footed ferrets occupy all colonies. <b>Standard</b></p>	<p>Standard removed with no replacement. (This is a redundant standard, and other black-footed ferret occupancy standards have been changed).</p>
#23	<p><b>Chapter 3, Management Area 3.63 Fish and Wildlife-1.</b> Use of rodenticides in a colony to reduce prairie dog populations may occur only after consultation and concurrence of the U.S. Fish and Wildlife Service. The conditions when prairie dog poisoning may be authorized are presented in Chapter 1. <b>Standard</b></p>	<p><b>Chapter 3, Management Area 3.63 Fish and Wildlife – 1 (amended).</b> Use of rodenticides in a colony to reduce prairie dog populations may occur only after consultation and concurrence of the U.S. Fish and Wildlife Service. <b>Standard</b></p>

## ALTERNATIVE 3

Item #	Delete:	Amend or Replace With:
#24	<p><b>Chapter 3, Management Area 3.63 Recreation - 1.</b> To help expand and maintain suitable black-footed ferret habitat, prohibit prairie dog shooting. Coordination and consultation with the state wildlife agency will occur prior to any Forest Service actions regarding prairie dog shooting restrictions.</p> <p><b>Standard</b></p>	<p><b>Chapter 3, Management Area 3.63 Recreation - 1 (amended).</b> To help expand and maintain suitable and secure black-footed ferret habitat in the Conata Basin reintroduction area, prohibit recreational prairie dog shooting. However, regulated shooting may be allowed in selected areas along property boundaries to help reduce unwanted colonization of adjoining agricultural lands. Apply this same direction to the Smithwick reintroduction habitat once ferrets are released into the area. Coordination with the state wildlife agency would occur prior to any Forest Service actions regarding prairie dog shooting closures. <b>Standard</b></p>





## APPENDIX D

### IMPLEMENTATION COSTS FOR FULL SUITE OF MANAGEMENT TOOLS

Some of the costs in this appendix are based on a predictive model. Actual acres and on-the-ground costs may vary.

#### Inventory and Monitoring

Average annual costs for inventory and monitoring of prairie dogs and black-footed ferrets include GPS/GIS mapping, prairie dog density surveys, pre-treatment ferret surveys and required ferret relocation work.

Alternative 1 - 10,000 acres @ \$5/acre = \$50,000

Alternative 2 - 11,000 acres @ \$5/acre = \$55,000

Alternative 3 - 10,000 acres @ \$5/acre = \$50,000

#### Rodenticide

Average annual costs include rodenticide, pre-bait, application, contract preparation, administration, and supervision.

Alternative 1 - 400 acres @ \$12/acre = \$5,000

Alternative 2 - 10,900 acres @ 12/acre = \$131,000

Alternative 3 - 8,400 acres @ 12/acre = \$101,000

#### Prairie Dog Live-trapping

Live-trapping includes relocation and BFF captive breeding support (Alternative 1 will require additional equipment and is dependent on having relocation sites available).

Alternative 1 - 3,000 acres @ \$30/acre = \$90,000

Alternative 2 - 500 acres @ \$25/acre = \$12,500

Alternative 3 - 1,000 acres @ \$25/acre = \$25,000

#### Management of Limited and Regulated Recreational Prairie Dog Shooting

(Management of regulated prairie dog shooting includes signing, law enforcement personnel and vehicles for MA 3.63 in Conata Basin)

Alternative 1 - Not Applicable

Alternative 2 - \$50,000

Alternative 3 - \$50,000

### Vegetation Management Fencing

Management fencing includes materials and construction costs.

Alternative 1 - 100 miles @ \$2,500/mile = \$250,000

Alternative 2 - 30 miles @ \$2,500/mile = \$75,000

Alternative 3 - 45 miles @ \$2,500/mile = \$113,000

### Visual Barrier Fencing

Visual barrier fencing includes materials and construction costs.

Alternative 1 - 60 miles @ \$9,000/mile = \$540,000

Alternative 2 - 10 miles @ \$9,000/mile = \$90,000

Alternative 3 - 20 miles @ \$9,000/mile = \$180,000

### Land Adjustment Program and Third Party Solutions

Land adjustment costs vary dependent upon the size and complexity of the land exchange case. Costs could be reduced through the use of consolidated land exchanges or third party land exchanges. Third party solution costs will vary greatly depending on the type of solution and the period of time.

### Summary of Implementation Costs

The total implementation costs for each alternative will vary dependent on which management tools are emphasized and the mix of management tools utilized to achieve boundary management for prairie dogs. Fencing, land adjustment and third party solutions would likely reduce the annual prairie dog management costs for rodenticide, regulated shooting, and live-trapping.

# **APPENDIX E**

## **BIOLOGICAL ASSESSMENT AND EVALUATION**



# **BIOLOGICAL ASSESSMENT AND EVALUATION<sup>1</sup>**

## **FOR**

### **BLACK-TAILED PRAIRIE DOG CONSERVATION AND MANAGEMENT**

#### **Nebraska National Forest and Associated Units**

Buffalo Gap and Fort Pierre National  
Grasslands, South Dakota

Oglala National Grassland, Nebraska  
National Forest and Samuel R. McKelvie  
National Forest, Nebraska

#### **Prepared and reviewed by:**

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#### **Biological Determinations Made By:**

/s/ Bob Hodorff 02/18/2005  
Bob Hodorff, Wildlife Biologist Date:

/s/ Glenn Moravek 02/18/2005  
Glenn Moravek, Wildlife Biologist Date:

/s/ Doug Sargent 02/18/2005  
Doug Sargent, Wildlife Biologist/Botanist Date:

/s/ John Sidle 02/18/2005  
John Sidle, Fish and Wildlife Biologist Date:

#### **Submitted to:**

**Donald J. Bright, Forest Supervisor**

<sup>1</sup> Meets the standards for both a Biological Evaluation (FSM 2672.42) and Biological Assessment (50 CFR 402.12(f)).

**February 2005**

## Species Table of Contents

### Species Considered in the Analysis and Species Eliminated from the Analysis

Blowout penstemon .....	E-15
American burying beetle.....	E-16
Black-footed ferret.....	E-16
Whooping crane .....	E-22
Bald eagle.....	E-24
Greater prairie chicken.....	E-30
American peregrine falcon.....	E-30
Northern goshawk.....	E-30
Greater sage grouse.....	E-31
McCown's longspur.....	E-31
Mountain plover.....	E-31
Brewer's sparrow .....	E-31
Trumpeter swan .....	E-31
Lewis's woodpecker .....	E-31
Sturgeon chub .....	E-31
Pearl dace.....	E-31
Finescale dace .....	E-31
Plains minnow.....	E-31
Spinulose woodfern .....	E-32
Lesser panicled sedge .....	E-32
Lesser yellow lady's slipper.....	E-32
Slender cottongrass .....	E-32
Yellow widelip orchid.....	E-32
Hall's bulrush.....	E-32
Lesser bladderwort.....	E-32
Fringed myotis .....	E-32
Townsend's big-eared bat.....	E-33
American bittern .....	E-33
Yellow-billed cuckoo.....	E-33

Loggerhead shrike.....	E-33
Black tern.....	E-33
Northern leopard frog .....	E-33
Plains leopard frog .....	E-33
Barr's orphaca (Barr's milkvetch) .....	E-33
Visher's eriogonum (Dakota buckwheat) .....	E-34
Black-tailed prairie dog.....	E-34
Swift fox.....	E-39
Greater prairie chicken.....	E-42
Long-billed curlew .....	E-44
Greater sage grouse.....	E-47
Northern harrier .....	E-50
Ferruginous hawk.....	E-53
Chestnut-collared longspur .....	E-56
McCown's longspur.....	E-60
Short-eared owl.....	E-63
Burrowing owl .....	E-67
Mountain plover.....	E-76
Brewer's sparrow .....	E-79
Grasshopper sparrow .....	E-82
Trumpeter swan .....	E-86
Regal fritillary.....	E-88



## I. INTRODUCTION

The purpose of this Biological Assessment (BA) and Biological Evaluation (BE) is to determine the likely effects of the alternatives for black-tailed prairie dog (prairie dog) (*Cynomys ludovicianus*) conservation and management on the Nebraska National Forest (NNF) for federally listed species and proposed species under the Endangered Species Act (ESA) (BA) and Forest Service sensitive species (BE) (FSM 2670.31-2670.32).

Section 7 of the ESA requires federal agencies to use their authorities to carry out programs to conserve endangered and threatened species, and to insure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of listed or proposed species, or result in the destruction or adverse modification of their designated critical habitats. A BA must be prepared for federal actions that are “major construction activities” (defined under the National Environmental Policy Act (NEPA) as a project significantly affecting the quality of the human environment) to evaluate the potential effects of the proposal on listed or proposed species. The contents of the BA are at the discretion of the federal agency, and will depend on the nature of the federal action (50 CFR 402.12(f)).

The Forest Service has established direction in Forest Service Manual 2670 to guide habitat management for Threatened, Endangered, Proposed, and Sensitive species (TEPS). Preparation of a BE as part of the NEPA process ensures that TEPS species receive full consideration in the decision-making process.<sup>1</sup>

## II. DESCRIPTION OF THE PROPOSAL

### PURPOSE AND NEED

The Record of Decision (ROD) for the Land and Resource Management Plan (LRMP) was signed on July 31, 2002. The ROD and LRMP provide general guidance and direction for conserving and managing prairie dogs on National Forest System (NFS) lands. This guidance and direction addresses use of rodenticides, landownership adjustment, vegetation management, livestock grazing, prairie dog shooting/hunting, translocation, and other management options to either expand or limit growth of prairie dog populations and colonies. The LRMP (p. 1–21) directs the Forest Service to consult statewide prairie dog management plans for additional guidance on the appropriate response to complaints of unwanted prairie dog colonization on adjacent agricultural lands. The ROD states that the Forest Service intends to implement statewide prairie dog management plans to the extent allowable by law and policy in providing direction for reducing unwanted prairie dog colonization on adjacent lands through a LRMP amendment, if necessary. Since the signing of the ROD, several events have occurred that make this proposal timely:

<sup>1</sup> Standards for preparation and the content of Biological Evaluations are established in the Forest Service Manual (FSM 2672.42). Additional guidance is provided in Region 2 Manual Supplement 2600-2003-1.

1. In the August 12, 2004, Federal Register, the U.S. Fish and Wildlife Service (FWS) decided that a proposed rule to list the prairie dog is not warranted, and the prairie dog is no longer a candidate species for listing under the ESA.
2. The South Dakota prairie dog management plan is in the final stages of completion and is awaiting approval. It is unlikely that the State of Nebraska will issue a statewide prairie dog management plan in the foreseeable future.
3. Extended drought conditions have increased prairie dog colony expansion and unwanted colonization of adjacent lands.
4. In response to the treatment of prairie dog colonies with zinc phosphide by USDA Animal and Plant Health Inspection Service (APHIS) in the fall of 2004, several conservation organizations expressed concern over the effects of this action on the Conata Basin black-footed ferret population and other associated wildlife.

## AREA AFFECTED

The areas affected by the proposed alternatives are the Buffalo Gap and Fort Pierre National Grasslands in South Dakota, and Samuel R. McKelvie and Nebraska National Forests and Oglala National Grassland in Nebraska.

**Buffalo Gap National Grassland.** The Buffalo Gap National Grassland is located in southwestern South Dakota and includes more than 589,000 acres of land that borders and is intermingled with private, state, Indian reservation, and national park lands. The eastern half of this unit extends from near Kadoka, South Dakota, on the east, to the Cheyenne River on the west, north to U.S. Highway 14, and south to the Pine Ridge Indian Reservation. The Wall Ranger District (WRD), Wall, South Dakota, administers the eastern half. The WRD is divided into 3 geographic areas (Wall North, Wall Southeast, and Wall Southwest). The Wall Southeast Geographic area contains a 5,130-acre block that is identified in the LRMP as 3.63 Black-footed Ferret Reintroduction Habitat. The Wall Southwest Geographic area contains Conata Basin which is a 73,590 acre block that is identified in the LRMP as 3.63 Black-footed Ferret Reintroduction Habitat. Ferrets have been successfully reintroduced into this area. The western half of the Buffalo Gap National Grassland extends from the Cheyenne River on the east to the Wyoming and Nebraska borders on the west and south, respectively. The Fall River Ranger (FRRD) District, Hot Springs, South Dakota, administers this unit. The FRRD is divided into 3 geographic areas (Fall River West, Fall River Southeast, and Fall River Northeast). The Fall River Southeast Geographic area contains a 25,300-acre block that is identified in the LRMP as 3.63 Black-footed Ferret Reintroduction Habitat.

**Fort Pierre National Grassland.** The Fort Pierre National Grassland (116,000 acres) lies south of Pierre, South Dakota, north of Interstate 90, and west of the Lower Brule Indian Reservation. The Fort Pierre National Grassland consists of mixed-grass vegetation on a rolling hill landscape just west of the Missouri River.

**Nebraska National Forest (Pine Ridge Ranger District).** These lands (50,500 acres) are in Dawes and Sioux Counties of northwestern Nebraska and include the Soldier Creek Wilderness



(7,800 acres). Elevations rise to 5,000 feet along ponderosa pine covered ridges. The unit is administered by the Pine Ridge Ranger District, Chadron, Nebraska.

**Nebraska National Forest (Bessey Ranger District).** About 90,200 acres of sandhills prairie makes up the Nebraska National Forest, Bessey Ranger District, located in central Nebraska in Thomas and Blaine counties. Topography consists of rugged sandhills.

**Samuel R. McKelvie National Forest.** The 116,100-acre Samuel R. McKelvie National Forest, administered by the Bessey Ranger District, lies in the Sandhills of north central Nebraska in Cherry County. Topography consists of rugged sandhills interspersed with large expansive valleys.

**Oglala National Grassland.** The 94,200-acre Oglala National Grassland lies in Dawes and Sioux counties of northwestern Nebraska and contains mostly mixed-grass vegetation. Topography consists of rolling hills and badlands. The grassland is administered by the Pine Ridge Ranger District, Chadron, Nebraska.

## EXISTING CONDITION

Approximate prairie dog colony acreage for each unit in the project area is shown in Table 1. A map of potential prairie dog habitat is maintained in the project record.

**Table 1. Acres of Active Prairie Dog Colonies during 2004 on National Grassland (NG) and National Forest (NF) units of the Nebraska National Forest.**

Location	Acres of Active Colonies*	Percent of Area in Colonies	Map #	Approximate Number of Colonies	Average Colony Acreage (range)
Buffalo Gap N.G.	26,030	4.4	2-6	309	85 (<1 to 4,060)
Fort Pierre N.G.	1,340	1.2	1	53	25 (<1 to 313)
Oglala N.G.	2,220	2.4	7	26	85 (<1 to 1,100)
Nebraska N. F. Bessey R. D.	90	0.1	8	9	10 (1 to 25)
Samuel R. McKelvie N. F.	0	0	0	0	0
Neb. N.F. Pine Ridge R. D.	0	0	0	0	0
Combined	29,680			397	75 (<1 to 4,060)

\*These acres do not include prairie dog colonies treated with rodenticide in the fall of 2004.

## LIST OF EFFECTS CONSIDERED IN THIS ANALYSIS/EVALUATION

- Effects of rodenticide use (total acres and general location) in and outside black-footed ferret (ferret) habitat on ferrets, prairie dogs, and other species (Alternatives 1, 2 and 3)
- Effects of modifying the current prairie dog shooting closure in Conata Basin on ferrets, prairie dogs and other wildlife species (Alternatives 2 and 3)
- Effects of delaying prairie dog shooting restrictions in Smithwick ferret habitat on ferrets, prairie dogs, and other wildlife species (Alternatives 2 and 3)



This analysis assumes all prairie dog colonies within the boundary management zone will be treated with rodenticide within the life of this project. However, compliance with all management direction under Alternatives 2 and 3, as well as specific circumstances within the boundary management zone, may result in less than the maximum acreage actually being treated.

There are no prairie dog colonies on the Samuel R. McKelvie National Forest and NNF, Pine Ridge Ranger District, and these areas are not included in any of the analyses in the Draft Environmental Impact Statement (DEIS). There are several small colonies on the NNF, Bessey Ranger District, but the long-term persistence of this population is uncertain because of marginal habitat capability. Because of this uncertainty, no prairie dog rodenticide use or other management tools will be considered or authorized for this area. Management of this prairie dog population will be limited to annual monitoring to determine population status and trend.

## **DISCUSSION OF ALTERNATIVES**

The following lists the alternatives being analyzed. For a more detailed description of the alternatives refer to Chapter 2 of the DEIS. Table 2 quantifies the differences between the alternatives and is used for effects analysis.

### **Alternative 1: (No Action) Current LRMP Direction**

*Description:* Prairie dog conservation concurrent with population management and regulation through non-lethal methods and limited rodenticide use.

### **Alternative 2:**

*Description:* Prairie dog conservation concurrent with population management and regulation through non-lethal methods and expanded rodenticide use along NFS boundaries (one mile boundary management zones)

### **Alternative 3:**

*Description:* Prairie dog conservation concurrent with population regulation through non-lethal methods and expanded rodenticide use along NFS boundaries (0.25 to 0.5 mile boundary management zones)

Table 2. Summary of Alternative Effects on Black-Tailed Prairie Dog Colonies and Rodenticide Use

Alternative And National Grassland/Forest	Current Colony Acreage Subject to Possible Rodenticide Use <sup>1</sup>	Predicted Annual Rodenticide Use <sup>2</sup> 2005–2012 (acres)	Current Active Colony Acreage <sup>3</sup> (Rodenticide Unlikely)	Current Number of Active Colonies / Average Colony Size <sup>3</sup> (Rodenticide Unlikely)	Predicted Colony Acreage in 2012 <sup>4</sup>
<b>Alternative 1</b>					
Buffalo Gap N.G.	480	<100	26,010 <sup>5</sup>	308 colonies / 84 acres	48,000 to 92,000 <sup>6</sup>
Conata Basin Ferret Habitat	200	<100	20,310 <sup>5</sup>	112 colonies / 181 acres	34,000 to 65,000 <sup>6</sup>
Smithwick Ferret Habitat	0	0	990	18 colonies / 55 acres	3,000 to 5,900
Fort Pierre N.G.	80	<100	1,260	49 colonies / 26 acres	1,900 to 2,700
Colony Complex	80	<100	770	11 colonies / 69 acres	1,100 to 1,700
Ogala N.G. and Colony Complex	0	<100	2,220	26 colonies / 85 acres	3,300 to 6,800
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	560	<300	29,580	392 colonies / 75 acres	53,000 to 102,000 <sup>6</sup>
<b>Alternative 2</b>					
Buffalo Gap N.G.	16,450	8,900 to 10,500	16,360	117 colonies / 140 acres	18,000 to 22,000
Conata Basin Ferret Habitat	8,410	4,700 to 6,200	15,140	82 colonies / 185 acres	17,000 to 20,000
Smithwick Ferret Habitat	460	230 to 290	530	8 colonies / 66 acres	700 to 800
Fort Pierre N.G.	1,340	470	0	0	0
Colony Complex	850	300	0	0	0
Ogala N.G. and Colony Complex	2,140	750	80	2 colonies / 40 acres	<100
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	19,930	10,120 to 11,720	16,530	128 colonies / 129 acres	18,000 to 22,000
<b>Alternative 3</b>					
Buffalo Gap N.G.	10,450	6,800 to 8,700	22,360	190 colonies / 118 acres	27,000 to 38,000
Conata Basin Ferret Habitat	4,260	3,300 to 6,200	19,290	101 colonies / 191 acres	23,000 to 32,000
Smithwick Ferret Habitat	210	160 to 290	780	14 colonies / 56 acres	1,300 to 1,800
Fort Pierre N.G.	470	120 to 210	870	36 colonies / 24 acres	1,100 to 1,400
Colony Complex	300	90 to 140	550	10 colonies / 52 acres	700 to 900
Ogala N.G. and Colony Complex	1,050	410 to 510	1,170	7 colonies / 167 acres	1,400 to 1,800
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	11,970	7,330 to 9,420	24,490	242 colonies / 101 acres	30,000 to 41,000

See footnotes on following page.

- <sup>1</sup> Based on GPS surveys in 2004 and includes colonies that may be a risk to health and safety or facilities (all alternatives) or located in boundary management zones (Alternatives 2 and 3); includes 6,780 acres of colonies treated with rodenticide in 2004
- <sup>2</sup> Includes colonies treated with rodenticide in 2004 and both initial and follow-up (maintenance) rodenticide applications
- <sup>3</sup> Based on GPS surveys in 2004; includes colonies that are not in boundary management zones or not currently a risk to health and safety or infrastructure
- <sup>4</sup> Projections for Alternatives 2 and 3 assume that some colonies within boundary management zones would not be treated with rodenticide
- <sup>5</sup> Does not include those colonies treated in 2004 because of unwanted colonization of adjoining agricultural lands (6,322 acres); prairie dog populations in these colonies are allowed to recover (re-populate) under Alternative 1; under Alternative 1, only those colonies that are potential risks to health and safety or facilities are subject to possible rodenticide use
- <sup>6</sup> Does not include colonies treated with rodenticide in 2004; at the upper end of the range, further colony expansion was limited by available habitat

## BIOLOGICAL ASSESSMENT AND EVALUATION PROCESS

**Supporting Information and Pre-field Review.** Two lists of plant and animal species were developed. The first list includes those species currently protected under the ESA (Table 5). The second list includes species that are considered sensitive by Region 2 of the Forest Service (Table 9).

Information on species at risk and their habitats was obtained from a large volume of published and unpublished references including regional programmatic BEs.

Biological Evaluation for the Black-footed Ferret (USDA Forest Service 1995e)

Biological Evaluation for Whooping Crane (USDA Forest Service 1995q)

Biological Evaluation for the American Burying Beetle (USDA Forest Service 1995e)

Biological Assessment for the Bald Eagle (USDA Forest Service 1995b, 1995c)

Biological Evaluation for the Swift Fox (USDA Forest Service 1995o)

Biological Evaluation for the American Bittern (USDA Forest Service 1995a)

Biological Assessment for the Long-billed Curlew (USDA Forest Service 1995h)

Biological Evaluation for the Ferruginous Hawk (USDA Forest Service 1995g)

Biological Evaluation for the Burrowing Owl (USDA Forest Service 1995f)

Biological Assessment for the Mountain Plover (USDA Forest Service 1995i)

Biological Evaluation for the Trumpeter Swan (USDA Forest Service 1995p)

Biological Evaluation for the Black Tern (USDA Forest Service 1995d)

Biological Evaluation for the Northern Leopard Frog (USDA Forest Service 1995j)

Biological Assessment for the Regal Fritillary Butterfly (USDA Forest Service 1995k)



Biological Evaluation for Sensitive Species in Not impacted by grazing (USDA Forest Service 1995l)

Biological Evaluation for Sensitive Species in Riparian Areas (USDA Forest Service 1995m)

The Regional Leadership Team initiated the Species Conservation Project (SCP) in April, 2000. The purpose of the project is to compile scientific information, and develop a comprehensive approach to conservation of fish, wildlife and plant species. Chartered as a 5-year project, it was designed to:

- Develop consistent scientific information and tools to improve our efforts to provide for species viability and ecosystem sustainability.
- Change and improve planning and implementation by integrating ecological objectives and outcomes early in the design phase, rather than mitigating negative impacts.
- Improve organizational effectiveness by streamlining analyses and building internal and external credibility.

The following SCP assessments were consulted during the preparation of this document:

- Fringed Myotis (*Myotis thysanodes*): a technical conservation assessment (Keinath 2004).
- Swift Fox (*Vulpes velox*): a technical conservation assessment (Stephens & Anderson 2005).
- Northern Goshawk (*Accipiter gentiles atricapillus*): a technical Conservation assessment (Kennedy 2003).
- Chestnut-collared Longspur (*Calcarius ornatus*): a technical conservation (Sedgwick 2004a).
- McCown's Longspur (*Calcarius mccownii*): a technical conservation assessment. (Sedgwick 2004b).
- Short-eared Owl (*Asio flammeus*): a technical conservation assessment (Wiggins 2004).
- The Burrowing Owl (*Athene cunicularia*): a technical conservation assessment (McDonald et al. 2004).
- Mountain Plover (*Charadrius montanus*): a technical conservation assessment (Dinsmore 2003).
- Brewer's Sparrow (*Spizella breweri*): a technical conservation assessment (Holmes and Johnson 2005).
- Grasshopper Sparrow (*Ammodramus savannarum*): a technical conservation assessment (Slater 2004).
- Black Tern (*Chlidonias niger surinamensis*): a technical conservation assessment (Naugle 2004).
- Lewis's Woodpecker (*Melanerpes lewis*): a technical conservation assessment (Abele et al. 2004, June 29).
- Sturgeon Chub (*Macrhybopsis gelida*): a technical conservation assessment (Rahel & Thel. 2004).

**Field Reconnaissance.** Surveys and inventories for listed species like the ferret and bald eagle have been conducted for many years by various individuals, organizations, and government

agencies including the Forest Service, U.S. Fish and Wildlife Service, universities, and state wildlife and natural resource agencies. Incidental sightings of species like the bald eagle, whooping crane, and peregrine falcon have also been recorded.

Additional surveys, research, and inventories have been conducted by the Forest Service and/or others with regards to other species such as swift fox, mountain plover, greater prairie chicken, sage grouse, western burrowing owl, and regal fritillary butterfly. Surveys of prairie dog colonies have also been conducted by the Forest Service. Information gathered from such field work was used to help describe species distributions, habitat use, and habitat suitability. The information was also critical in helping to determine potential effects from implementation of each of the alternatives. Maps display the known locations of species on the units. They do not imply species distribution across the areas.

**Analysis of Effects.** The potential effects of each alternative on each species are disclosed in this document. These evaluations include direct, indirect, and cumulative effects on each species. Cumulative effects are described at the scale of the NNF unless otherwise specified. The effects, expressed as biological determinations, are based on the assumption that the standards and guidelines in the LRMPs are fully implemented and strategically located to benefit species at risk.

To reduce the number of analyses, any species listed in the tables that meet one or more of following criteria (screens) was eliminated from further analyses:

**Screen 1 - (Importance of Area).** Presence of the species or suitable habitat is doubtful or has not been documented.

**Screen 2 - (Threats).** The species or potential habitat for the species may occur, but it's highly unlikely that land uses and allocations authorized by the Forest Service would affect the species and/or its habitat either on NFS lands or downstream.

### Biological Determinations

This BA and BE process culminates with a determination of the likely effects of each alternative on each species. The types of determinations that can be made for those species protected under ESA are determined by the U.S. Fish and Wildlife Service (1998) (Table 3).

No critical habitat has been proposed or designated on any of the lands administered by the NNF.

**Table 3. Biological determinations for federally listed and proposed species**

Threatened and Endangered Species:	
Determination	Abbreviation
• No effect	NE
• May affect, not likely to adversely affect	MA-NLAA
• May affect, likely to adversely affect	MA-LAA
Species proposed for federal listing:	
Determination	Abbreviation

• Not likely to jeopardize continued existence	NLJ
• Likely to jeopardize continued existence	LJ

Direction in Forest Service Manual 2670 establishes the types of determinations for Forest Service-designated sensitive species. The determinations (and abbreviations) made for these species are presented in Table 4.

**Table 4. Biological determinations for Forest Service sensitive species**

Region 2 Sensitive Species:	
Determination	Abbreviation
• No impact	NI
• Beneficial impact	BI
• May adversely impact individuals but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide	MAII
• Likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of species viability range-wide	LRLV

A biological determination is being made for each species for each national grassland and forest where the species or suitable habitat is located.

## GENERAL EFFECTS

### Direct effects

Direct effects are caused by the action and occur at the same time and place (50 CFR 1508.8).

Prairie dog rodenticide (2% zinc phosphide bait) when properly applied is highly effective in reducing prairie dog populations within treated colonies. Poisoning of non-target species can occur but is minimized when the rodenticide is applied according to label specifications and during favorable weather. In studies conducted in Conata Basin, measurable reductions in non-target populations were documented for deer mice (*Peromyscus maniculatus*), ants (Hymenoptera), and darkling beetles (Coleoptera), but there was no measurable reduction in avian and other invertebrate populations (Apa et al. 1991, Deisch et al. 1990, Uresk et al. 1985a, Uresk et al. 1985b, and Uresk et al. 1986).

Zinc phosphide is a heavy, finely ground gray black powder that is practically insoluble in water. When exposed to moisture it decomposes slowly and releases phosphine gas. Phosphine may be generated rapidly if the material comes in contact with dilute acids. When zinc phosphide comes in contact with dilute acids in the stomach, phosphine is released and it is this substance that causes death. Animals that ingest lethal amounts of bait usually die from asphyxiation within 3-5 hours (Timm 1983).

Zinc phosphide is a strong emetic (cause vomiting) which can factor into how much of the chemical it takes to kill the animal and whether or not an animal dies after ingesting the chemical (Schitoskey 1975).



The chemical zinc phosphide is used to treat grain bait (oats) for consumption by prairie dogs. Untreated grain is typically applied to the application area a few days prior to zinc phosphide application to promote consumption of the grain. Prairie dogs in most cases will not eat the grain bait until early in the fall when their natural forage matures and dries (South Dakota Department of Agriculture et al. 1994). When proper procedures are followed, efficacy of zinc phosphide bait is typically 90% or higher (South Dakota Department of Agriculture et al. 1994).

Zinc phosphide is not stored in the muscle or other tissue of poisoned animals. There is no true secondary poisoning. However, it does remain toxic for as long as several days in the gut of dead rodents. Other animals can be poisoned if they eat enough of the gut content of rodents recently poisoned with zinc phosphide (Timm 1983). This threat is lessened because most prairie dogs poisoned with zinc phosphide treated grains die inside their burrows (Tietjen 1976).

There is only a small amount of deterioration of zinc phosphide baits due to the evolution of phosphide gas; therefore, dry baits must be considered toxic indefinitely. Lecithin-mineral oil, added to zinc phosphide to adhere to grain bait, offers protection against moisture, and therefore increases its stability. Under field conditions, zinc phosphide baits may remain toxic several months until eroded by weather or decomposition of the carrier or the grain is removed by insects (Timm 1983).

Translocation of phosphine gas has been demonstrated, but it is rapidly converted to harmless phosphates (Timm 1983).

The LRMP prohibits the use of rodenticides (above-ground baits) for reducing prairie dog populations outside the period October 1 to December 31 to reduce risks to migratory birds. To reduce risk to other wildlife, the LRMP does not allow burrow fumigants in prairie dog colonies.

Prairie dog shooting can affect prairie dog populations. Shooting of prairie dogs may significantly reduce prairie dog densities (Vosburg and Irby 1998) and indefinitely maintain reduced densities in smaller isolated colonies (Knowles 1987). Shooting prairie dogs in colonies that have been previously poisoned could likely prevent or slow population recovery in those colonies.

Another direct effect is the inadvertent or intentional killing of non-target animals while shooting prairie dogs. Even though in most cases lead bullets are used while shooting prairie dogs, there is little chance of secondary lead poisoning of animals eating prairie dogs that were shot because the bullet passes completely through the animal and is not available for ingestion. Also, gunfire and other related activity and disturbances may disrupt prairie dog foraging and other activities for extended periods of time. Prairie dogs exhibit different behavioral patterns in colonies where shooting occurs compared to colonies where there is no shooting. Prairie dogs in hunted colonies were more wary and responded more quickly to humans on foot and in vehicles, and may have spent less time foraging than individuals in non-hunted colonies (Vosburgh and Irby 1998).

### **Indirect effects**

Indirect effects are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable (50 CFR 1508.8).

An indirect effect is the loss of habitat as a result of rodenticide use and reductions in prairie dog populations. Prairie dogs tend to cut all tall vegetation down in the vicinity of the colony, creating low structure grassland. Permanently removing prairie dog populations from an area could result in shift in the vegetative community from a buffalograss/ blue grama sod to a western wheatgrass/green needle community (this is dependent on the soil type for the particular site where the prairie dog colony is located). This in turn could alter habitat suitability for a variety of wildlife species in the area.

Prairie dog burrows create a unique habitat for other creatures, including burrowing owls, badgers, rabbits, black-footed ferrets, snakes, salamanders, and insects. Without live prairie dogs to maintain the burrow system, the burrows will deteriorate. Within a few years the burrow system breaks down, and its value to other wildlife is reduced.

A short-term indirect effect is reduction of prey base as a result of rodenticide use in prairie dog colonies. In the long term, vegetation on inactive prairie dog colonies can shift to a mixed grass prairie, with reduced densities of both small mammals and birds (Agnew 1983).

### **Cumulative effects**

From a NEPA perspective, cumulative effects are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of agency (Federal or non-Federal) or person that undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (50 CFR 1508.7).

From an ESA perspective, cumulative effects are defined as those effects of future state or private activities, not involving Federal activities that are reasonably certain to occur within the action area. (Future federal actions will be subject to their own consultation.)

An obvious cumulative effect to this action is the additional reduction of prairie dog populations resulting from rodenticide use by other entities. Over 6,700 acres of colonies have already been treated with rodenticide on Buffalo Gap National Grassland. Nearly 24,250 acres of prairie dog colonies have been reported as treated with rodenticides on nearby private land by the State of South Dakota in 2004 (South Dakota 2005). It is likely that there will be additional and substantial requests for more rodenticide treatment on Tribal and private lands.

Plague is currently not known to occur on any prairie dog colony within lands administered by the NNF. However, plague was confirmed in a prairie dog colony in western Custer County, South Dakota in September, 2004 near the border of Wyoming and South Dakota. Prairie dogs are highly susceptible to plague, which is considered to be a serious threat to the persistence of local prairie dog populations. The potential for plague to occur in prairie dog populations on the national grasslands and forests in the project is unknown, but it is acknowledged that plague can have dramatic impacts on prairie dog populations.

Other activities that can affect prairie dog populations in the project area include livestock grazing, construction, oil and gas exploration, and farming.

### III. THREATENED, ENDANGERED, AND PROPOSED SPECIES CONSIDERED IN THE ANALYSIS

Threatened, endangered, and proposed species that may be present in the action area are provided in Table 5.

**Table 5. Federally Listed Species Located on NFS Lands in the Project Area**

**STATUS: ENDANGERED**

	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. Pine Ridge R. D.	Nebraska N. F. Bessey R. D.	Samuel R. McKelvie N. F.
<b>MAMMALS</b>						
Black-footed ferret	K					
<b>BIRDS</b>						
Whooping crane	K	K			K	
<b>INVERTEBRATES</b>						
American burying beetle					K	
<b>PLANTS</b>						
<i>Penstemon haydenii</i>					K	K

**STATUS: THREATENED**

<b>BIRDS</b>						
Bald eagle	K	K	K	K	K	K

K = Known occurrence in vicinity; date of last observation suggests that species still occurs in area,

### SPECIES ELIMINATED FROM FURTHER ANALYSIS

All species eliminated from further analysis have been determined to have a “no effect” biological determination.

#### Screen 1 (Importance of Area)

None

#### Screen 2 - (Threats)

##### BLOWOUT PENSTEMON

*Penstemon haydenii*

Rationale: Blowout penstemon occurs in sand blowouts of the Bessey Ranger District and Samuel R. McKelvie National Forest. It is highly unlikely that prairie dog colonies could persist in the unstable soils of a sandhill blowout.



**AMERICAN BURYING BEETLE***Nicrophorus americanus*

Rationale: American burying beetle only occurs on the Bessey Ranger District and Samuel R. McKelvie National Forest. No change in management is proposed for this area in this decision. Also, rodenticide use is not authorized.

**IV. CONSULTATION HISTORY**

On December 14, 2004, a list of threatened, endangered, and proposed species that may be present in the action area was submitted to the U.S. Fish and Wildlife Service (FWS) (Table 5). Concurrence with the list of species was received on December 23, 2004. However, FWS recommended that the whooping crane (*Grus americana*) be added to the list.

Consultation with FWS for the revision of the LRMP is summarized in Appendix H of the Final Environmental Impact Statement (FEIS) and all consultation records are maintained in the project record for the LRMP in the Forest Supervisor's office in Chadron, Nebraska.

**V. ANALYSIS OF EFFECTS – FEDERALLY LISTED AND PROPOSED SPECIES****BLACK-FOOTED FERRET***Mustela nigripes*

**Distribution and Status.** Historically, the black-footed ferret (ferret) distribution in North America corresponded primarily with that of prairie dogs (Higgins et al. 2000). The ferret is considered to be one of the rarest mammals in North America and the world, and was listed as endangered in 1967. Endangerment of the ferret came about largely through, 1) reductions and fragmentation of prairie dog colonies through poisoning, cultivation, urbanization and plague, 2) unintentional poisoning of ferrets through prairie dog poisoning efforts, and 3) disease, specifically canine distemper and plague (USDA Forest Service 2000).

Much of what is known about black-footed ferret biology was learned from research during 1964 through 1974 on a remnant population in South Dakota. Black-footed ferrets were "rediscovered" in prairie dog complexes at Meeteetse in 1981. That population remained through 1986, a period when much was learned about ferret life history and behavior. In 1985, sylvatic plague, a lethal disease to prairie dogs, was confirmed in the prairie dogs at Meeteetse. The fear of plague was overshadowed by the discovery of canine distemper, a disease lethal to ferrets.

A plan was formulated to place animals from Meeteetse into captivity to protect them from distemper and to start a captive breeding program. In 1986, all remaining ferrets were removed from the wild, resulting in a captive population of 18 individuals. Captive breeding of ferrets eventually became very successful. Progress in captive breeding has produced over 5,000 ferrets.

A goal of the breeding program is to retain as much genetic diversity as possible, but the only practical way to increase diversity is to find more wild ferrets. In spite of intensive searches of the remaining good ferret habitat and investigations of sighting reports, no wild ferrets have been found.

The captive breeding program now is producing sufficient surplus ferrets for reintroduction into the wild. Initiated in 1991, ferrets have been reintroduced in eight areas across six western states including one site in Mexico (CBSG 2004). Ferret recovery is still not assured given severe habitat limitations and disease (CBSG 2004). Challenges facing the black-footed ferret reintroduction include low survivorship of released ferrets due to high dispersal and losses to other predators; unknown influence of low genetic diversity; canine distemper hazard; indirect effect of plague on prairie dogs and possible direct effect on ferrets; and low availability of suitable habitat for reintroduction.

**Habitat.** The ferret is known to inhabit prairie dog colonies almost exclusively. Colonies provide the ferret with its primary food source and shelter (USDA Forest Service 2000). The movement of ferrets between prairie dog colonies is characterized as dispersal (USDA Forest Service 2001a).

#### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA—Endangered	G1, N1; Nebraska – SH; South Dakota – S1

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

In an intra-Service consultation on the reintroduction of ferrets into the Conata Basin/Badlands Area dated April 7, 1994, a low level of incidental take was anticipated from private land uses and authorized agency actions. Based on the best available information at that time, the FWS set an anticipated annual incidental take level from human-caused mortality of 12 percent for the entire experimental population. If the incidental take level is exceeded in any year, Section 7 consultation would immediately be reinitiated.

The ferret within the designated experimental population area on the Buffalo Gap National Grassland is considered a proposed species rather than endangered. A Final Rule, published in the Federal Register on August 18, 1994, designated an experimental population area that includes the Buffalo Gap National Grassland and surrounding areas. Reintroduced ferrets are considered part of a non-essential experimental population in accordance with section 10(j) of the ESA. Such designation requires that future section 7 consultations shall consider the ferret population within the experimental population area on the Buffalo Gap National Grassland as a species proposed for listing.

**Recovery and Conservation Planning.** As described in the LRMP FEIS (USDA Forest Service 2001b), the FWS 1988 ferret recovery plan objective is to ensure the immediate survival of the species by accomplishing the following:

- 1) Increasing the captive population of ferrets to a census size of 200 breeding adults by 1991;



- 2) Establishing a pre-breeding census population of 1,500 free-ranging ferret breeding adults in 10 or more populations, with no fewer than 30 breeding adults in any population by the year 2010; and
- 3) Encourage the widest possible distribution of reintroduced ferret populations.

**Existing Conditions.** Among the land units administered by the NNF, the only known population of ferrets occurs in the Conata Basin, Buffalo Gap National Grassland (Map 9 and 10).

Reintroduction habitat for the ferret is designated as MA 3.63 in the current LRMP (USDA Forest Service 2001c). The MA 3.63 designation only exists on the Buffalo Gap National Grassland and collectively encompasses a total of 104,020 acres. There are approximately 20,310 acres of prairie dogs within the Conata Basin ferret reintroduction area and approximately 990 acres of prairie dogs within the Smithwick ferret reintroduction area. To date, ferrets have not been released on Smithwick.

The Conata Basin site has become the most successful ferret reintroduction site in the nation. Currently, the Conata Basin ferret reintroduction site has a minimum known population of 201 ferrets of which 104 are adults (Livieri and Perry 2005). From 1996 to 2004, there have been 389 litters totaling 773 ferret kits born in the wild on the Conata Basin site. The success of the Conata Basin site has been such that wild born ferret kits have been available for translocation to other reintroduction sites. To date, a total of 38 kits have been translocated to other ferret reintroduction sites. The Conata Basin site continues to yield a wealth of new information about black-footed ferrets and their ecology.

In 2000, the ferret population appeared to approach carrying capacity (equilibrium) and has oscillated since that year (Livieri and Perry 2005). To maintain a viable ferret population in the Conata Basin, modeling of data from 2000 to 2002 suggests that a ferret family rating of approximately 200 would be needed (Livieri and Perry 2005). The figures derived from the model are considered as approximations allowing for some degree of flexibility. Livieri and Perry (2005) state that the model used is for alternative comparisons such that ferret family ratings should be interpreted as relative rather than absolute.

Prairie dog densities were based on the Biggins et al. (1993) model to calculate ferret family ratings, using 200 for the ferret family rating. For ferrets, the threshold would be a ferret family rating of 200, Table 6 outlines the necessary size and densities needed to support this ferret family rating.

**Table 6. Prairie dog area and densities modeled to maintain ferret family rating of 200.**

Acres	Hectares	Density/Ac/Ha	Total PD	Ferret Rating
25,128	10,173	6.1/15	152,600	200
18,846	7,630	8.1/20	152,600	200
15,077	6,104	10.1/25	152,600	200
12,564	5,087	12.1/30	152,600	200
10,769	4,360	14.2/35	152,600	200
9,423	3,815	16.2/40	152,600	200



**Direct, Indirect and Cumulative Effects.** Primary and secondary poisoning of ferrets by the consumption of rodenticide-treated bait or poisoned prairie dogs is not considered a significant threat to ferrets (USDA Forest Service 2001b). Prey availability for ferrets would be reduced through applying rodenticide for prairie dogs and repeated rodenticide applications would eventually reduce burrow availability for shelter (USDA Forest Service 2001b). The ferret would not likely suffer any direct effects from the use of zinc phosphide rodenticide used to reduce prairie dog populations, but would be indirectly affected by reduced prey availability through the loss of prairie dogs and the reduced surface area of habitat.

The possibility of accidental ferret mortality exists with prairie dog shooting (Joslin and Youmans 1999). Prairie dog shooting could directly cause the accidental death of a ferret, although the potential for ferrets being shot is lessened by their nocturnal habit. However, ferrets have been known to be aboveground during daylight hours, particularly early morning and late evening periods when prairie dog shooting may be occurring.

Cumulatively, prairie dog habitat subject to rodenticide use and shooting would likely provide little if any ferret habitat. Livestock grazing can also indirectly influence prairie dog colony acreages (USDA Forest Service 2001b). Livestock grazing at high levels can promote low vegetative structure and encourage prairie dog acreage expansion, whereas a low level or elimination of livestock grazing can help promote higher vegetative structure which can contain, reduce or eliminate prairie dog acreage. Precipitation events in terms of timing and amount can also be a dominant influence on vegetation structure, promoting or inhibiting plant growth. The cumulative effect of these factors can interact in variable ways to either promote or inhibit prairie dog colonies used as ferret habitat.

Additional cumulative effects may arise from land management activities by adjacent landowners. Prairie dog rodenticide use will likely occur at some level on adjacent private and tribal lands resulting in further losses of potential ferret habitat (USDA Forest Service 2001b). In addition, ferret habitat could be further reduced and fragmented in the event of plague epizootics in prairie dog colonies (USDA Forest Service 2001b).

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE BLACK-FOOTED FERRET**

### **Alternative 1 (No Action) – Current LRMP Direction**

This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. For the Buffalo Gap National Grassland (within the Conata Basin/ Badlands experimental population area) the determination is *“not likely to jeopardize the continued existence of the species.”*

Rationale: Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

There would be no change to management of ferret habitat along the boundary between Buffalo Gap National Grassland and Badlands National Park under this alternative.

This determination is also supported by the additional analyses conducted for this DEIS by Livieri and Perry (2005). In these analyses, three levels of prairie dog densities are utilized to determine ferret family ratings for each alternative. Predictions of ferret family ratings for Alternative 1 and the other alternatives are provided in Table 7. Under moderate to high prairie dog densities, Alternative 1 exceeds the minimum 200 ferret family rating recommended for maintaining a long-term ferret population.

**Table 7. Predicted Black-Footed Ferret Family Rating based on low, moderate and high prairie dog densities per acre for each alternative.**

Alternative	Low 6.3/Ac	Moderate 10.8/Ac	High 15.3/Ac
1	167	287	406
2	125	214	303
3	159	272	386

## Alternative 2

**Buffalo Gap N.G. (within the Conata Basin/ Badlands experimental population area):** The biological determination for the ferret under Alternative 2 inside the Conata Basin/Badlands experimental population area on the Buffalo Gap National Grassland is: *"not likely to jeopardize the continued existence of the species."*

Rationale: Because the ferret is designated a nonessential experimental population within the Conata Basin site, the ferret population is not considered essential to the conservation or continued existence of the species. Also, if minimum black-footed ferret habitat thresholds, as identified by Livieri and Perry (2005), appear to be compromised by proposed rodenticide use, changes would be made in the proposed use. In these cases, rodenticide use would not be authorized or would be limited to less than a mile from adjoining lands. These thresholds, based on current information, indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population (Livieri and Perry 2005). The predicted prairie dog colony acreage under this alternative is 17,000 to 20,000, which exceeds the minimum thresholds.

On a short-term basis, the current prairie dog colony acreage could be reduced to approximately 15,140 acres following initial rodenticide applications. Approximately 15,000 acres of colonies at moderate prairie dog density levels would be needed to maintain a minimum ferret family rating of 200. At low prairie dog densities, the ferret family rating threshold of 200 would not be met if low densities occurred across the entire Conata Basin ferret area. Under this alternative, rodenticide use would be modified to maintain a minimum 200 ferret family rating. As indicated in Table 7, Alternative 2 meets and exceeds the minimum threshold at moderate and high prairie dog densities.

Two additional areas within the experimental population area designated as 3.63 black-footed ferret reintroduction habitat are located west of Interior and north of the Badlands National Park. These areas have not demonstrated any contribution to the ferret program on the Buffalo Gap



National Grassland and will not contribute in the foreseeable future (Livieri and Perry 2005). These sites do not provide sufficient habitat on their own to support a ferret population because of its relatively isolated location in relation to Conata Basin and the questionable ferret recovery efforts in the Badlands National Park.

Limited regulated shooting of prairie dogs may be allowed within the one-mile zone excluding the interior portions of the ferret reintroduction habitat area. It is likely that ferrets would be present within the one-mile zone open to some limited and regulated prairie dog shooting within the Conata Basin site such that ferret mortality from shooting could potentially occur. Cumulatively, the use of rodenticide and shooting may keep prairie dog populations low in those areas where both are used.

Due to close proximity to private land within the one-mile boundary management zone, some limited rodenticide use could occur on a few prairie dog colonies on NFS lands which border the Badlands National Park in the Bigfoot Road area. Due to the limited habitat potential within this area of the Park, effects on the Badlands National Park portion of the ferret population would be insignificant and discountable.

### Alternative 3

**Buffalo Gap N.G** (within the Conata Basin/ Badlands experimental population area): The biological determination for the ferret under Alternative 3 inside the Conata Basin/Badlands experimental population area on the Buffalo Gap National Grassland is: *“not likely to jeopardize the continued existence of the species”*.

Rationale: Because the ferret is designated a nonessential experimental population within the Conata Basin site, the ferret population is not considered essential to the conservation or continued existence of the species. Also, rodenticide use in the Conata Basin black-footed ferret reintroduction area could only extend to a half mile if minimum black-footed ferret population thresholds continue to be met. These thresholds, based on current information, indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population (Livieri and Perry 2005). If the minimum thresholds are not being met, rodenticide use would not occur or would be limited to less than a half mile from adjoining lands. Under this alternative, it is predicted there will be between 23,000 and 32,000 acres of active prairie dog colonies in Conata Basin by the year 2012.

Under Alternative 3, the total prairie dog colony acreage could be reduced to approximately 19,290 acres in the short-term after rodenticide application. Under this alternative, approximately 15,000 acres at moderate prairie dog density levels would be needed to maintain a minimum ferret family rating of 200. At low prairie dog densities, the ferret family rating threshold of 200 would not be met if low densities occurred across the entire Conata Basin ferret area. Under this alternative, rodenticide use would be modified to maintain a minimum 200 ferret family rating. As indicated in Table 7, Alternative 3 meets and exceeds the minimum threshold at moderate and high prairie dog densities.

Two additional areas within the experimental population area designated as 3.63 black-footed ferret reintroduction habitat are located west of Interior and north of the Badlands National Park. These areas have not demonstrated any contribution to the ferret program on the Buffalo Gap National Grassland and will not contribute in the foreseeable future (Livieri and Perry 2005).



These sites do not provide sufficient habitat on their own to support a ferret population because of its relatively isolated location in relation to Conata Basin and the questionable ferret recovery efforts in the Badlands National Park.

Limited regulated shooting of prairie dogs may be allowed within the half mile zone excluding the interior portions of the ferret reintroduction habitat area. It is likely that ferrets would be present within the half mile zone open to some limited and regulated prairie dog shooting within the Conata Basin site such that ferret mortality from shooting could potentially occur.

Cumulatively, the use of rodenticide and shooting may keep prairie dog populations low in those areas where both are used.

Due to close proximity to private land within the half mile boundary management zone, some limited rodenticide use could occur on a few prairie dog colonies on NFS lands which border the Badlands National Park in the Bigfoot Road area. Due to the limited habitat potential within this area of the Park, effects on the Badlands National Park portion of the ferret population would be insignificant and discountable.

## WHOOPING CRANE

### *Grus Americana*

**Distribution and Status.** Whooping cranes were once near extinction with only 15 or 16 wintering individuals in 1941, but by 1995 there were 257 birds in captivity and in the wild (Lewis 1995). These large white cranes are rare migrants across Fort Pierre National Grassland (Peterson et al. 1991), Buffalo Gap National Grassland (Graupman et al. 1991), and the Bessey Ranger District (Peterson et al. 1993). The whooping cranes that migrate through South Dakota and Nebraska nest in Canada and winter on the Texas Gulf Coast (Ashton and Dowd 1991).

**Habitat.** Locally, the migrants use shallow water, including stock dams, as overnight roost sites (Ashton and Dowd 1991). Most wetlands used for roosting during migration were less than about 10 acres in size and within 1 km of suitable feeding sites, croplands or wetlands (Lewis 1995). The birds are omnivorous and feed on plants and animals, including grain (Ashton and Dowd 1991).

## ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA—Endangered	G1, N1N; Nebraska - S1; South Dakota - SNA

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** In fall, whooping cranes are known to migrate through South Dakota between 8 September and 11 November (Tallman et al. 2002). The maps 11-13 show local sites in the project area where the birds have rested during past migrations.

Conservation agencies monitor these birds as they migrate from Canada to the Gulf Coast. A contingency plan is in place to protect whooping cranes should they appear locally during fall migration.

**Direct, Indirect, and Cumulative Effects.** There is a remote possibility that whooping cranes could be exposed to rodenticide bait (oats) if they stopped on a project area during migration. Feeding patterns of the cranes, the low concentration of zinc phosphide in the bait, the small amount of bait applied per unit area, widely scattered bait, and the short time bait is exposed contribute to low primary and secondary hazards to the birds (Tietjen 1976).

The actual process of applying rodenticide might also deter or scare cranes from the immediate area.

Changes in the structure and composition of vegetation after prairie dog poisoning occurs would not affect cranes, as they are only present on the ground locally while resting along migration routes.

The application of prairie dog rodenticide or sport shooting would not influence food available for these migrants.

Whooping cranes could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a whooping crane for a prairie dog. The fact that the whooping crane is a protected species should be a deterrent. There are very stiff penalties for killing or injuring an endangered species, and this is well known. Gunfire and other hunter activities might scare birds locally, but these potential effects are considered insignificant and discountable.

Cumulative effects to whooping cranes include collisions with fences and power lines. Lawless shooters sometimes kill birds.

## DETERMINATION OF EFFECT AND RATIONALE FOR THE WHOOPING CRANE

### **Alternative 1:** (No Action) Current LRMP Direction

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is “*may affect, not likely to adversely affect*”

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### **Alternative 2:**

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for the whooping crane under Alternative 2 is: “*may affect, not likely to adversely affect*”.

Rationale: With the implementation of this alternative, it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide could be applied to 10,120 to 11,720 acres of prairie dogs each year (Table 2). Some



limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

It is possible that whooping cranes could ingest rodenticide bait in treated colonies. Realistically, the likelihood of whooping cranes landing where rodenticide was recently applied is so remote that it is considered a “discountable effect.”

Alternative 2 could increase the chance of a prairie dog shooter coming into contact with a whooping crane, but the effects will still be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting does not change the acreages of prairie dog habitat in this analysis.

### **Alternative 3:**

**Buffalo Gap N.G, Fort Pierre N.G, & Oglala N.G.** The biological determination for whooping cranes under Alternative 3 is: “*may affect, not likely to adversely affect*”.

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticide could be applied to between 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures would not be applied to the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled.

It is possible that whooping cranes could ingest rodenticide bait in treated colonies. Realistically, the likelihood of whooping cranes landing where rodenticide was recently applied is so remote that it is considered a “discountable effect.” The contingency plan (administrative record) is in place and consultation with the FWS would help reduce risks to cranes.

Alternative 3 could increase the chance of a prairie dog shooter coming into contact with a whooping crane, but the effects will still be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin will be used to augment the rodenticide treatment. Shooting does not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall whooping crane populations.

### **BALD EAGLE**

#### *Haliaeetus leucocephalus*

**Distribution and Status.** Bald eagles are mainly winter residents or migrating individuals in South Dakota, Wyoming, Colorado, and Nebraska, with few, but increasing, isolated nesting occurrences. It is a fairly common winter resident in suitable habitat along major riparian areas and river systems. In South Dakota, they are listed as an uncommon migrant (SDOU 1991), but there has been an increase in nesting pairs recently. In Nebraska, the first successful nest was documented in 1992 on the Loup River, and successful nest have been reported each year since (Central Nebraska Public Power and Irrigation District 2004).



**Habitat.** The Bald Eagle is mostly found near water, primarily on river systems, large lakes, reservoirs and coastal areas. These birds are mainly scavengers, feeding on dead and dying fish, rodents, waterfowl, and other animals. Bald Eagles generally roost together in large mature trees surrounded by a buffer of smaller trees (Ashton and Dowd 1991).

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA - Threatened	G4, N4B, N4N; Nebraska - S1; South Dakota - S1B, S2N

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** Nebraska and South Dakota are included in the Northern States Bald Eagle Recovery Zone. The recovery plan for the northern states was prepared in 1983. Although critical habitat has been designated, none of the areas is on or near NFS lands within the planning area. The general goals for delisting the species is 1,200 occupied breeding territories in the Northern States recovery zones. Delisting goals have already been met for the Northern States recovery zone (U.S. Fish and Wildlife Service 1995 and 1999).

**Existing Conditions.** Maps 14-17 display the recorded locations of bald eagles on the various units of the NNF. There are no documented bald eagle nests on the NNF. In the spring of 2004, South Dakota Game Fish & Parks worked with the FWS, the National Park Service, and the Nebraska Game and Parks to perform aerial surveys to locate all of the active bald eagle nests in South Dakota. As of the end of April, there were 32 active bald eagle nests in South Dakota or on the Nebraska side of the Missouri River along the shared river boundary. Nests were found in Fall River and Lyman counties which are in the vicinities of the Buffalo Gap National Grassland & Fort Pierre National Grassland respectively (SDGFP Web Page 2004). Winter roost and spring nest surveys have been completed on the segments of the Cheyenne River that are part of the Buffalo Gap National Grassland. Individual bald eagles have been sighted but no winter roost concentrations or nests have been found (Hetlet 1994-2004).

**Direct, Indirect, and Cumulative Effects.** Bald eagles are present on the NNF after October 1 when the rodenticide treatments will take place, so they could be exposed to the zinc phosphide treated grain. They are not a granivorous species so direct consumption of the treated grain is not expected. They are known to feed on carrion (Ashton and Dowd, 1991), so consumption of prairie dogs that have been poisoned is a possibility. This threat is lessened, because most prairie dogs poisoned with zinc phosphide treated grains die inside their burrows (Tietjen 1976). Tietjen (1976) cited two studies, one in which bald eagles were fed zinc phosphide killed nutria (*Myocaster coypus*); in the other, golden eagles (*Aquila chrysaetos*) were fed jackrabbits (*Lepus californicus*) that were killed with zinc phosphide. In both cases, the eagles showed no sign of secondary intoxication. Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Bald eagles could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a bald eagle for a prairie dog. It is always possible for an unethical prairie dog shooter to kill an eagle. The fact that the bald eagle is protected under

both the ESA and the Bald and Golden Eagle Protection Act and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring an endangered species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

Because of abundant prey, it would be expected that bald eagles would frequent prairie dog colonies for hunting, but they are not dependent on prairie dogs or prairie dog colonies for their survival. Prey base for bald eagles could be reduced when prairie dog colonies are managed. In the short term, prairie dogs and other susceptible species are killed directly by the poison. In the long term, after repeated treatment, the habitat could convert from a prairie dog colony to a mixedgrass prairie. The densities of both small mammals and birds were less on mixed grasslands compared to prairie dog colonies in a study completed in South Dakota (Agnew 1983). This is not expected to affect bald eagle populations, considering that the most important habitat for the bald eagle is near lakes and large rivers where they feed mostly on fish (DeGraaf et al. 1991).

Other activities in the area that may affect bald eagles and bald eagle habitat include but are not limited to, livestock grazing, animal damage control, trapping, and hunting.

## DETERMINATION OF EFFECT AND RATIONALE FOR THE BALD EAGLE

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G, Fort Pierre N.G, & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *"may affect, not likely to adversely affect"*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### Alternative 2:

**Buffalo Gap N.G, Fort Pierre N.G, & Oglala N.G.** The biological determination for bald eagles under Alternative 2 is: *"may affect, not likely to adversely affect"*.

**Rationale:** With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide would be applied to between 10,120 and 11,720 of prairie dog colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Considering that bald eagles do not eat grain and the threat of secondary poisoning is small, the direct effect of the increased rodenticide use in prairie dog colonies over the current program will be slight. The reduction in acreage of prairie dog colonies could be detrimental to bald eagles in the area because of the decreased prey base, but this can not be quantified. Considering that the bald eagle is a wide ranging species and that prairie dog colonies make up a small component of



their habitat, this decrease in prey base may affect a few individuals but will have little effect on overall populations.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a bald eagle, but the effects will still be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin may be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis.

### Alternative 3

**Buffalo Gap N.G, Fort Pierre N.G, & Oglala N.G.** The biological determination for bald eagles under Alternative 3 is: *"may affect, not likely to adversely affect"*.

**Rationale:** With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide would be applied to between 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be applied to the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled.

Considering that bald eagles do not eat grain and the threat of secondary poisoning is small, the direct effect of the increase in rodenticide use over the current program will be slight. The reduction in acreage of prairie dog colonies could be detrimental to bald eagles in the area because of the decreased prey base, but this can not be quantified. Considering a bald eagle is a wide ranging species and that prairie dog colonies make up a small component of their habitat, this decrease in prey base may affect a few individuals but will have little effect on overall populations.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a bald eagle, but the effects will still be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin may be used to augment rodenticide use. Shooting would not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall bald eagle populations.



### Summary of Determinations Effects for Federally Listed Species

Table 8 presents the determinations for each federally listed species analyzed by alternative:

**Table 8. Federally Listed Species Determinations under the Alternatives**

Common Name	Alternative 1			Alternative 2			Alternative 3		
	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.
MAMMALS									
Black-footed ferret (within experimental population area)	NLJ	--	--	NLJ	--	--	NLJ	--	--
BIRDS									
Whooping crane	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA
Bald eagle	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA

**NE** = No effect-- where no effect is expected.

**MA-NLAA** = May affect, not likely to adversely affect -- where effects are expected to be insignificant (immeasurable) or discountable (extremely unlikely to occur).

**MA-LAA** = May affect, likely to adversely affect -- where effects are expected to be adverse or detrimental.

**NLJ** = Not likely to jeopardize continued existence -- where effects are expected to be beneficial, insignificant (immeasurable), or discountable (extremely unlikely to occur).

**LJ** = Likely to jeopardize continued existence -- where effects are expected to reduce appreciably the reproduction, numbers, or distribution of the species.

## VI. SENSITIVE SPECIES CONSIDERED IN THE ANALYSIS

Table 9 lists the sensitive species, or their habitats, that are located on the NNF and associated units (USDA Forest Service 2004).

**Table 9. Region 2 Sensitive Species Located on NFS Lands in the Project Area**

### STATUS: SENSITIVE

	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. Pine Ridge R. D.	Nebraska N. F. Bessey R. D.	Samuel R. McKelvie N. F.
<b>MAMMALS</b>						
Fringed-tailed myotis	K	---	K	K	---	---
Townsend's big-eared bat	K	---	P	P		
Black-tailed prairie dog	K	K	K	K	K	P
Swift fox	K	K	K	---	---	---
<b>BIRDS</b>						
American bittern	K	K	K	---	P	K
Greater prairie-chicken	---	K	---	---	K	K
Yellow-billed cuckoo	K		K	K	K	K
Long-billed curlew	K	K	K	---	K	K
American peregrine falcon	K	K	K	K	P	P
Northern goshawk	P	P	P	P	P	P
Greater sage grouse	K	---	---	---	---	---
Northern harrier	K	K	K	K	K	K
Ferruginous hawk	K	K	K	K	K	K
Chestnut-collared longspur	K	K	K	---	K	K
McCown's longspur	---	---	K	---	---	---
Short-eared owl	K	K	K		K	K
Western burrowing owl	K	K	K	K	K	K
Mountain plover	K	---	---	---	---	---
Loggerhead shrike	K	K	K	K	K	K
Brewer's sparrow	K	---	---	---	---	---
Grasshopper sparrow	K	K	K	K	K	K
Trumpeter swan	K	---	---	---	---	K
Black tern	K	K	K	---	P	P
Lewis's woodpecker	P	---	K	K	---	---
<b>AMPHIBIANS</b>						
Plains leopard frog	K	K	K	K	K	K
Northern leopard frog	K	K	K	K	K	K
<b>FISHES</b>						
Sturgeon chub	K	---	---	---	---	---
Pearl dace	---	---	---	---	P	P
Finescale dace	---	---	---	---	P	P
Plains minnow	P	P	P	---	---	---
<b>INVERTEBRATES</b>						
Regal fritillary butterfly	K	K	---	---	K	---

	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. Pine Ridge R. D.	Nebraska N. F. Bessey R. D.	Samuel R. McKelvie N. F.
<b>PLANTS – Ferns &amp; Allies</b>						
<i>Dryopteris carthusiana</i>	---	---	---	---	P	K
<b>PLANTS – Monocots</b>						
<i>Carex diandra</i>	---	---	---	---	P	P
<i>Cypripedium parviflorum</i>	---	---	---	---	P	P
<i>Eriophorum gracile</i>	---	---	---	---	P	P
<i>Liparis loeselii</i>	---	---	---	---	P	P
<i>Schoenoplectus hallii</i>	---	---	---	---	P	P
<b>PLANTS – Dicots</b>						
<i>Astragalus barrii</i>	K	---	P	---	---	---
<i>Eriogonum visherii</i>	K	---	P	---	---	---
<i>Utricularia minor</i>	---	---	---	---	P	P

K = Known occurrence in vicinity; date of last observation indicates that species still occurs in area,

P = Possible but unconfirmed occurrence,

## SPECIES ELIMINATED FROM FURTHER ANALYSIS

All species eliminated from further analysis have been determined to have a “no impact” biological determination.

### Screen 1 (Importance of Area)

#### GREATER PRAIRIE CHICKEN

*Tympanuchus cupido*

##### Buffalo Gap N.G. & Oglala N.G.

Rationale: The Buffalo Gap National Grassland & Oglala National Grassland are outside of the current distribution of the greater prairie chicken (Svedarsky et al. 2003).

#### AMERICAN PEREGRINE FALCON

*Falco peregrinus*

Rationale: Occurrence of this species on or near the planning units is highly incidental, unpredictable and limited to migrants passing through these areas. Potential and suitable nesting habitat within the planning area either does not exist or is negligible.

#### NORTHERN GOSHAWK

*Accipiter gentilis*

Rationale: Occurrence of this species on or near the planning units is highly incidental, unpredictable, and currently limited to migrants passing through these areas. If breeding is confirmed in the future on or near these areas, this biological evaluation will be revisited and revisions to management direction considered.



**GREATER SAGE GROUSE***Centrocercus urophasianus***Fort Pierre N.G. & Oglala N.G.**

Rationale: The Fort Pierre National Grassland & Oglala National Grassland does not have enough sagebrush habitats to sustain a sage grouse population.

**MCCOWN'S LONGSPUR***Calcarius mccownii***Buffalo Gap N.G & Fort Pierre N.G.**

Rationale: The Buffalo Gap National Grassland & Fort Pierre National Grassland are outside of the current distribution of the McCown's longspur (Dechant et al 2003d).

**MOUNTAIN PLOVER***Charadrius montanus***Fort Pierre N.G.**

Rationale: There has never been a documented occurrence of the mountain plover on, or in the vicinity of, the Fort Pierre National Grassland.

**BREWER'S SPARROW***Spizella breweri***Fort Pierre N.G.**

Rationale: The Fort Pierre National Grassland does not have enough sage brush habitats to sustain a Brewer's sparrow population.

**TRUMPETER SWAN***Cygnus buccinator***Fort Pierre N.G. & Oglala N.G.**

Rationale: The only trumpeter swan sightings have been on Buffalo Gap National Grassland and Samuel R. McKelvie National Forest.

**LEWIS'S WOODPECKER***Melanerpes lewis*

Rationale: Occurrence of this species on or near the planning units is highly incidental, unpredictable. This species prefers open forest and woodland, often logged or burned, including oak, coniferous forest (primarily ponderosa pine, riparian woodland and orchards, less commonly in pinyon-juniper. Distribution closely associated with open ponderosa pine forest in western North America, and is strongly associated with fire-maintained old-growth ponderosa pine (NatureServe 2004). Potential and suitable nesting habitat within the planning area either does not exist or is negligible.

**STURGEON CHUB***Macrhybopsis gelida***PEARL DACE***Margariscus margarita***FINESCALE DACE***Phoxinus neogaeus***PLAINS MINNOW***Hybognathus placitus*

Rationale: Fish are aquatic species. It is highly unlikely that any management direction affecting prairie dogs could significantly affect aquatic habitat.

#### **SPINULOSE WOODFERN**

*Dryopteris carthusiana*

Rationale: *D. carthusiana* is a circumboreal species found in wet woods, moist wooded slopes, stream banks, swamps and fen carr (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

#### **LESSER PANICLED SEDGE**

*Carex diandra*

Rationale: *C. diandra* is a circumboreal species found in wet meadows, springs and fens on floating and non-floating moss mats at 6100-8600 feet (Wyoming Natural Diversity Data Base 2004). These are habitats not affected by prairie dog management.

#### **LESSER YELLOW LADY'S SLIPPER**

*Cypripedium parviflorum*

Rationale: *C. parviflorum* is found in Northern Lowland Forests, Northern Upland Forests and Shrub-Carrs (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

#### **SLENDER COTTONGRASS**

*Eriophorum gracile*

Rationale: *E. gracile* occupies fens and boggy meadows (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

#### **YELLOW WIDELIP ORCHID**

*Liparis loeselii*

Rationale: *L. loeselii* exists in aquatic and wetland environments such as perennially wet meadows and wet forests (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

#### **HALL'S BULRUSH**

*Schoenoplectus hallii*

Rationale: *S. hallii* inhabits moist sands to sandy-peaty substrates of shores and bottoms of shallow ephemeral ponds, sinkhole ponds and other sand prairie habitats where widely fluctuating water levels keep a sand substrate free of other vegetation (NatureServe 2004). These are habitats not affected by prairie dog management.

#### **LESSER BLADDERWORT**

*Utricularia minor*

Rationale: *U. minor* is a circumboreal species found in open bogs, sedge meadows and marshlands and prefers calcium-rich shallow water (Northern Prairie Wildlife Research Center 2003). These are habitats not affected by prairie dog management.

#### **Screen 2 - (Threats)**

#### **FRINGED MYOTIS**

*Myotis thysanodes*

Rationale: Typically, these bats roost in caves, natural rock crevices and abandoned buildings. Males, when netted, were frequently found to have dirt or clay like substances within their fur and crevices of their wing membranes suggesting day roosting in soft soil crevices (Tigner and

Dowd Stukel 2003). They feed on insects and will not be affected by poisoned grain. There is no information to suggest there are more flying insects on prairie dog colonies or that bats use prairie dog burrows.

#### **TOWNSEND'S BIG-EARED BAT**

*Corynorhinus townsendii*

Rationale: This bat is dependent year-round upon underground roosting sites (caves or mines) (Tigner and Dowd Stukel 2003). They feed on insects and will not be affected by poisoned grain. There is no information to suggest there are more flying insects on prairie dog colonies or that bats use prairie dog burrows.

#### **AMERICAN BITTERN**

*Botaurus lentiginosus*

Rationale: American bitterns use tall, dense, shallow- or deep-water emergent vegetation in wetlands; native vegetation in wet meadows; and moderately tall, dense, native or tame vegetation in uplands adjacent to wetlands. American bitterns prefer relatively large ( $\geq 8$  acres) wetlands, ranging in size from 8 to 550 acres (Dechant et al. 2003a). Prairie dogs will not be found in the wetland habitat.

#### **YELLOW-BILLED CUCKOO**

*Coccyzus americanus*

Rationale: Yellow-billed cuckoos favor moderately dense thickets near watercourses, as well as second growth woodlands. They are mainly insectivorous and will not be affected by poisoned grain. Prairie dogs will not be found in woodland habitat.

#### **LOGGERHEAD SHRIKE**

*Lanius ludovicianus*

Rationale: Loggerhead shrikes are generally found around brush, trees and fences. They are largely insectivorous, but do eat some small mammals, birds and reptiles (DeGraaf et al. 1991). They migrate in September (Tallman et al. 2002). Prairie dogs will not be found in woodland habitat.

#### **BLACK TERN**

*Chlidonias niger*

Rationale: Black terns may be limited by wetland size as they were absent from Iowa marshes  $< 5$  ha (12.3 acres) and were most common in wetlands  $> 20$  ha (49.4 acres) (Naugle 2004). Prairie dogs will not be found in the wetland habitat.

#### **NORTHERN LEOPARD FROG PLAINS LEOPARD FROG**

*Rana pipiens*

*Rana blairi*

Rationale: Northern and Plains leopard frogs are wetland obligates, using a wide variety of aquatic habitats, such as springs, slow streams, marshes, reservoirs, and lakes. It is most often found at sites with permanent water and rooted aquatic vegetation (NatureServe 2004). Prairie dogs would not be found in the aquatic habitat.

#### **BARR'S ORPHACA (BARR'S MILKVETCH)**

*Astragalus barrii*

Rationale: *A. barrii* grows primarily on dry, rocky prairie knolls, hillsides and barren areas. Populations are found on sparsely vegetated badlands and breaks of whitish, sandy-silty



calcareous at elevations of 3700-5700 feet (Wyoming Natural Diversity Data Base 2003). These are habitats not affected by prairie dog management.

### VISHER'S ERIOGONUM (DAKOTA BUCKWHEAT)

*Eriogonum visherii*

**Rationale:** *E. visherii* occupies barren shale and clay outcrops of badland formations. It occurs amidst relatively harsh growing conditions. Ground cover is lean, with a minimum of 50% bare ground, and more often an excess of 90% bare ground. Light is open, with minimal shading from surrounding geology. Erosion and deposition rates are high. Where the species occupies the badlands outwash, the slopes are low; where the species occupies the edges of alluvium the slopes are steep (NatureServe 2004). These are habitats not affected by prairie dog management. Prairie dogs may create conditions that are suitable for *E. visherii*, but would not normally colonize what is currently considered optimum suitable habitat for this species.

## ANALYSIS OF EFFECTS – SENSITIVE SPECIES

### BLACK-TAILED PRAIRIE DOG

*Cynomys ludovicianus*

**Distribution and Status.** Throughout the Great Plains, the range of the prairie dog extends from southern Canada to northern Mexico (Higgins et al. 2000). The U.S. Fish and Wildlife Service (2004a) reported that state agencies currently estimate that prairie dog occupied habitat is approximately 1,842,000 acres. In Canada and Mexico, an additional 51,589 acres of prairie dog habitat exist as reported by the U.S. Fish and Wildlife Service in a news release dated August 12, 2004.

The U.S. Fish and Wildlife Service (2000) determined that listing of the black-tailed prairie dog was warranted but precluded by other higher priority listing actions. Later, the U.S. Fish and Wildlife Service (2004a) concluded that the black-tailed prairie dog does not warrant listing.

**Habitat.** This species occurs mostly on shortgrass and mixed grass prairie. Some populations are also found in the Nebraska Sandhills. Suitability of habitats for this species is enhanced by low vegetative cover and increased visibility to detect predators and enhance social behaviors. Because of this, these animals prefer areas with disturbed soils and/or grasslands grazed by cattle or bison. They typically colonize grasslands of a wide variety of soil types that are flat to gently rolling. They avoid wetlands and areas with high water tables. Hoogland (1995), Jones et al. (1983), Knowles (1982), and Clippenger (1989) were consulted for additional information on the habitat relationships of this species.

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G3, N3N4; Nebraska – S4; South Dakota – S4; Forest Service - Sensitive Species

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** The State of South Dakota has completed the final draft of a conservation and management plan for the prairie dog, pending approval by the state legislature. Other species assessments include “The Black-tailed Prairie Dog Conservation Assessment and Strategy” (Van Pelt 1999), “An Umbrella, Multi-state Approach for the Conservation and Management of the Black-tailed Prairie Dog, *Cynomys Ludovicianus*, in the United States” (Luce 2001) and “A Multi-State Conservation Plan for the Black-tailed Prairie Dog in the United States” (Luce 2003).

**Existing Conditions.** The black-tailed prairie dog is listed as a sensitive species in Region 2, which includes the project area. Prairie dog colonies occur on Fort Pierre National Grassland, Buffalo Gap National Grassland and Oglala National Grassland. Approximate colony acreage for each unit is shown in Table 1.

There are no prairie dog colonies on the Samuel R. McKelvie National Forest and Pine Ridge Ranger District, and these areas are not included in any of the analyses. There is a small prairie dog population consisting of several small colonies on the Bessey Ranger District, but as indicated in the Northern Great Plains Biological Assessment and Evaluation, the long-term persistence of this population is uncertain because of marginal habitat capability. Because of this uncertainty, no prairie dog rodenticide use or other management tools will be considered or authorized for this area. Management of this prairie dog population will be limited to annual monitoring to determine population status and trend.

Plague is currently not known to occur on any prairie dog colonies within lands administered by the NNF. Recently, plague was confirmed in a prairie dog in western Custer County, South Dakota in September of 2004 near the border of Wyoming and South Dakota. Prairie dogs are highly susceptible to plague and it is considered to be a serious threat to the persistence of local prairie dog populations (USDA Forest Service 2001b). Additional plague locations from subsequent surveys have not been identified to date, and monitoring is expected to continue into the foreseeable future (South Dakota Department of Game, Fish and Parks 2004). No additional information about this plague incident is known at this time. The potential for plague to occur on prairie dog colonies within lands administered by the NNF and the potential impacts are unknown, but it is acknowledged that plague can have dramatic impacts on prairie dog populations. The U.S Fish and Wildlife Service (2000) stated that the majority of suitable, plague-free prairie dog habitat occurs in South Dakota.

**Direct, Indirect and Cumulative Effects.** The prairie dog is the target species for the rodenticide use programs outlined in the proposed action. The rodenticide is 2% zinc phosphide bait (oats). When proper procedures are followed, efficacy of zinc phosphide bait is typically 90% or higher (South Dakota Department of Agriculture et al. 1994). Where other active colonies are nearby, prairie dog populations in colonies treated with rodenticide commonly recover to pre-treatment levels within 3 to 5 years (Knowles 1986, Uresk and Schenbeck 1987).

As a management tool, the recreational shooting of prairie dogs has potential to limit prairie dog populations (Vosburgh and Irby 1998). Prairie dog shooting can affect prairie dog populations and densities. As a minimum, it's suspected that shooting of prairie dogs can significantly reduce prairie dog densities (Vosburg and Irby 1998) and indefinitely maintain reduced densities in smaller isolated colonies (Knowles 1987). Shooting prairie dogs in colonies that have been previously poisoned could likely prevent or slow population recovery in those colonies.



Vosburgh and Irby (1998) estimated prairie dog population declines to be approximately 2 times higher and the minimum survival to be 22% lower in hunted versus non-hunted prairie dog colonies. It is estimated that shooting reduces the number of prairie dogs by 2.25 per acre per year as derived from reports by Schenbeck (1994) for the Conata Basin/Badlands area. A summary from the South Dakota Department of Game, Fish and Parks (2001), states that, on non-tribal lands, recreational shooters killed 1.52 million prairie dogs in 2001 of which 86.3 percent were shot on private land. Shooting by residents occurs throughout the year and mostly in the summer, while nonresidents do most of their shooting in May, June or October depending on the type of license they possess (South Dakota Game, Fish and Parks 2001). Vosburgh and Irby (1998) noted an increase in prairie dog hunters during September of 1994 explaining that some hunters include prairie dogs among other species they specifically planned to hunt.

Cumulatively, the use of prairie dog rodenticide and limited regulated shooting would likely be expected to keep prairie dog populations at low levels in areas where both are occurring. The impacts of shooting may be a contributing factor to prairie dog population fragmentation, in that recovery of colonies could be delayed or precluded by other factors, including rodenticide use (U.S. Fish and Wildlife Service 2000).

## DETERMINATION OF EFFECT AND RATIONALE FOR THE BLACK-TAILED PRAIRIE DOG

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### Alternative 2

**Fort Pierre N.G.** The biological determination for prairie dogs under Alternative 2 is: *“likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of viability range-wide”*.

**Rationale:** This alternative results in the smallest acreages of prairie dog colonies and the largest amount of rodenticide use (Table 2).

The Fort Pierre National Grassland currently has approximately 1,340 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate most of the prairie dog populations on the unit. This alternative would likely prevent achievement of the LRMP direction to establish a prairie dog colony complex in the northeast portion of the grassland. A prairie dog colony complex is defined as being a group



of at least 10 prairie dog colonies with nearest-neighbor inter-colony distances not exceeding 6 miles and a total colony complex acreage of at least 1,000 acres (USDA Forest Service 2001c). The use of this definition for a colony complex is designed to enhance long-term viability of prairie dog populations on Fort Pierre National Grassland.

**Buffalo Gap N.G.** The biological determination for prairie dogs under Alternative 2 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing”*.

Rationale: This alternative results in the smallest acreages of prairie dog colonies and the largest amount of rodenticide use (Table 2).

Collectively, the Buffalo Gap National Grassland has approximately 26,030 acres of prairie dog colonies. Under this alternative, 16,450 acres would be subject to rodenticide treatment and it is predicted that there will be between 18,000 and 22,000 acres of active prairie dog colonies on the Buffalo Gap National Grassland by the year 2012. In addition, some limited and regulated prairie dog shooting may also be allowed within a one-mile zone along private and tribal boundaries. The shooting closure is retained in the interior portions of the Conata Basin Black-footed Ferret Reintroduction Habitat area.

Given the predicted range of 18,000 and 22,000 acres of prairie dogs by the year 2012, long-term viability would be likely.

**Oglala N.G.** The biological determination for prairie dogs under Alternative 2 is: *“likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of viability range-wide”*.

Rationale: This alternative results in the smallest acreages of prairie dog colonies and the largest amount of rodenticide use (Table 2).

The Oglala National Grassland currently has approximately 2,220 acres of prairie dog colonies on the unit. Under this alternative, 2,140 acres could be subject to rodenticide use, and it is predicted that there will be less than 100 acres of active prairie dog colonies on the Oglala National Grassland by the year 2012. This alternative would not be expected to achieve LRMP direction to establish and maintain a prairie dog complex on the grassland. A prairie dog complex is defined as being a group of at least 10 prairie dog colonies with nearest-neighbor inter-colony distances not exceeding 6 miles with a total colony complex acreage of at least 1,000 acres (USDA Forest Service 2001c). The use of this definition for a colony complex is designed to enhance the long-term viability of the prairie dog on the unit.

The potential loss of prairie dog acres within the one-mile boundary management zone represents a potential loss of over 90 percent of the total acreage. Long-term viability of prairie dogs on the unit is questionable and would likely preclude the establishment of a prairie dog colony complex as prescribed in the LRMP.

### Alternative 3

**Fort Pierre N.G.** The biological determination for prairie dogs under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing”*.

**Rationale:** This alternative results in intermediate prairie dog colony acreages and rodenticide use levels (Table 2).

The Fort Pierre National Grassland currently has approximately 1,340 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate up to approximately 470 acres of prairie dog habitat within the 0.25-mile boundary management zone leaving approximately 870 acres remaining. The predicted range of prairie dog colonies across the grassland is predicted to be between 1,100 and 1,400 acres by the year 2012, suggesting that long-term viability of the prairie dog population on the unit is likely.

Given the predicted range over by the year 2012 of 1,100 and 1,400 acres of prairie dog colonies, the LRMP direction to establish one or more prairie dog complexes in the northeast portion of the grassland would likely be achieved.

**Buffalo Gap N.G:** The biological determination for prairie dogs under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing”*.

**Rationale:** This alternative results in intermediate prairie dog colony acreages and rodenticide use levels (Table 2).

Collectively, the Buffalo Gap National Grassland has approximately 26,030 acres of prairie dog colonies. Under this alternative, 10,450 acres will be subject to rodenticide use, and it is predicted that there will be between 27,000 and 38,000 acres of active prairie dog colonies on the Buffalo Gap National Grassland by the year 2012. In addition, some limited and regulated prairie dog shooting may also be allowed within the half-mile zone along private and tribal boundaries in the Conata Basin Black-Footed Ferret Reintroduction Habitat area. Under this alternative, the Forest Service would not consider limiting prairie dog shooting in the Smithwick Black-Footed Ferret Reintroduction Habitat area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service. Given the predicted range of 27,000 and 38,000 acres of prairie dog colonies remaining under this alternative, long-term viability would be considered likely.

**Oglala N.G.** The biological determination for prairie dogs under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing”*.

**Rationale:** This alternative results in intermediate prairie dog colony acreages and rodenticide use levels Table 2.

The Oglala National Grassland currently has approximately 2,220 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate up to approximately 1,050 acres of prairie dog colonies within the half-mile zone leaving approximately 1,170 acres. The range of prairie dog colonies across the grassland is predicted to be between 1,400 and 1,800 acres by the year 2012.

The remaining colonies of approximately 1,170 acres would likely meet the LRMP direction to establish a prairie dog colony complex. Long-term viability of prairie dogs on the grassland is likely given the predicted range of 1,400 and 1,800 acres by the year 2012.



**SWIFT FOX***Vulpes velox*

**Distribution and Status.** The swift fox is native to the short grass and mixed grass prairie in the Great Plains region of North America. It was considered common or abundant in much of its original range until the late 1800's to the early 1900's. From this period to the 1950's, the swift fox was thought to be extirpated in Kansas, Montana, and Canada, and there were no reported sightings in Oklahoma, Wyoming, South Dakota, North Dakota, and Nebraska (U.S. Fish and Wildlife Service 2000). Beginning in the 1950's, swift fox numbers appeared to be recovering over much of their former range.

**Habitat.** This species inhabits open prairies, plains and shrubby desert areas. It is found in areas with gently rolling hills or undulating topography. Swift fox prefer short to midgrass prairies and loamy soils and utilize dens year around (Harrison and Whitaker-Hoagland 2003). Soil type might be a better predictor of swift fox habitat suitability than vegetation type (Harrison and Whitaker-Hoagland 2003). Swift fox select loamy soils over clayey soils for den sites. This species is an opportunistic feeder on small mammals, birds, insects, berries, vegetation and carrion (Ashton and Dowd 1991). Predation by coyotes appears to be the most common mortality factor for swift fox (Allardyce & Sovada 2003) (Stephens & Anderson 2005). The key factor in swift fox management is to provide suitable habitat where the swift fox can obtain prey while avoiding predation.

Uresk and Sharps (1986) found swift fox in close association with prairie dog colonies in Shannon County, South Dakota. Other studies have found swift fox to thrive without prairie dog colonies (Allardyce & Sovada 2003). Size of prairie dog complexes could be very important in determining whether or not swift fox will use prairie dog colonies. Prairie dog colonies, because of the abundant prey, attract many predators. There is a possibility (although not documented in the literature) that swift fox could actually avoid the small prairie dog colonies because the abundance of predators could outweigh the benefits of an increased forage base. Allardyce & Sovada (2003) state "It is apparent from the studies done by the Swift Fox Conservation Team and the individual states during the past 3 to 5 years that swift fox populations in today's altered landscape are not necessarily dependent on the availability of prairie dog colonies and complexes." There is one prairie dog colony near the swift fox population that is on the Buffalo Gap National Grassland near Ardmore, South Dakota. None of the bait stations within 1.5 miles of this prairie dog colony had swift fox tracks in them during the 2003-4 survey (Hetlet 1991-2004).

**ESA Status and Other Organizational Rankings**

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G3, N3; Nebraska – S2; South Dakota – S1; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** Conservation assessment and conservation strategy for the swift fox was prepared in 1997 (Kahn et al. 1997). The goal of the strategy is to maintain or restore swift fox populations within each state to provide spatial, genetic, demographic structure of the United States swift fox population throughout at least 50 % of the suitable habitat



available, to ensure long term species viability and to provide species management flexibility. Nebraska and South Dakota are included in the assessment.

**Existing Condition.** Maps 18-21 display the recorded locations of swift fox on the various units in the project area. Swift fox have been located on all three of the national grasslands. The swift fox that have been sighted on the Fort Pierre National Grassland are a result of a reintroduction effort initiated by the Turner Endangered Species Fund (TESF) on the Bad River Ranch west of Fort Pierre National Grassland (Map 18). The swift fox that have been sighted on the east half of the Buffalo Gap National Grassland (Map 19) are a result of a reintroduction effort initiated by the Badlands National Park. On the Oglala National Grassland (Map 20) there have been incidental sightings of swift fox, but there is no evidence of a resident population.

Swift fox populations have blinked in and out on different areas of the west half (Map 21) of the Buffalo Gap National Grassland (Hetlet 1991-2004) (Hodorff 2004). The only population that has persisted is located near Ardmore, South Dakota. The area is identified in the LRMP as 3.64 Special Plant and Wildlife Habitat: Swift Fox Management Area. This area is referred to as the Ardmore swift fox population.

**Direct, Indirect, and Cumulative Effects.** Swift fox are a year-round resident of the project area. They are in the area after October 1 (which is when the prairie dog colonies will be treated with rodenticide) and could be exposed to zinc phosphide treated grain. They are not a granivorous species, so direct consumption of the treated grain is not an issue. They are known to feed on carrion (Ashton and Dowd, 1991). Schitoskey (1975) reported that if kit fox (*Vulpes macrotis*) found surface kills that were the result of a rodenticide, there is little doubt that they would eat the carcasses or return them to the den to feed their young. This threat is lessened because most prairie dogs poisoned with zinc phosphide treated grains die inside their burrows (Tietjen 1976). Schitoskey (1975) used the desert kit fox (*Vulpes macrotis arsipus*) to determine effects of zinc phosphide. The LD<sub>50</sub> for kit fox was 93 (62-140) mg/kg. When kit foxes were fed kangaroo rats (*Dipodomys ordii*) killed with zinc phosphide, there was no secondary poisoning. To put it into perspective, if a kangaroo rat swallowed or stuffed its cheeks with 1 g of the most concentrated zinc phosphide bait, it would theoretically contain 16.4 mg of the chemical. Kit foxes survived repeated feedings of rats dosed with about 29 times this amount of zinc phosphide (Schitoskey 1975). Secondary poisoning of swift fox while using zinc phosphide treated oats is not an issue.

Swift fox could be shot or injured by prairie dog shooters. The fact that swift fox is somewhat similar in appearance to a coyote pup (especially in the spring when the coyote pups are small), could increase the odds of a swift fox being killed or injured by a prairie dog shooter and unethical individuals may intentionally shoot at a swift fox while shooting prairie dogs. The fact that the swift is a protected species in the states of South Dakota and Nebraska and it is against the law to kill or harass them should be a deterrent. Also, swift fox are primarily nocturnal (Allardyce & Sovada 2003), diminishing the chance of a shooter seeing a swift fox. Gunfire and other hunter activities may scare swift fox locally, but this will not be a factor concerning their population viability on the area.

Because of abundant prey, swift fox might frequent prairie dog colonies for hunting. The prey base for swift fox would be reduced when prairie dog colonies are treated with a rodenticide. Swift fox are not dependent on prairie dogs or prairie dog colonies for their survival (Allardyce

& Sovada 2003). The generalist foraging behavior of swift fox makes food an unlikely limiting factor (Allardyce & Sovada 2003).

If the prairie dogs are eliminated, the vegetation within the colony would revert from a short grass community to a mixedgrass community. Swift fox can do well in short or mixedgrass prairie (Allardyce & Sovada 2003, Uresk et al. 2003). It is doubtful that this shift in vegetation will have much effect.

Other activities in the area that may affect swift fox and swift fox habitat include but are not limited to, livestock grazing, animal damage control, trapping, & hunting.

## DETERMINATION OF EFFECT AND RATIONALE FOR THE SWIFT FOX

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### Alternative 2

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for swift fox under Alternative 2 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

**Rationale:** With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of colony each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Considering that swift fox will not eat the grain, and the threat of secondary poisoning is small, the direct effect of the increase in rodenticide application over the current program will still be slight. The reduction in acreage of prairie dog colonies would reduce the overall prey base, but there is no reason to expect serious negative effects at a population level, given habitat that will still be provided.

### Alternative 3

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for swift fox under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.



Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction habitat until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Considering that swift fox will not eat the grain, and the threat of secondary poisoning is small, the direct effect of the increase in rodenticide use over the current program will be slight. The reduction in acreage of prairie dog colonies could be detrimental to swift fox in the area because of the decreased prey base, but this can not be quantified. Considering that the avoidance of predators may be more important to swift fox survival than obtaining food, the increase in predators around a prairie dog colony may actually be a deterrent, so the decrease in prairie dog acres may not be a problem. Clearly more research needs to be done on swift fox / prairie dog relationships.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a swift fox (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis.

### **GREATER PRAIRIE CHICKEN *Tympanuchus cupido***

**Distribution and Status.** Before European settlement, greater prairie chicken generally inhabited tall grass prairies (Johnsgard 1983) in the central and northeast United States. Today they occupy less than 10 percent of this maximum historic range (Johnsgard 1983).

**Habitat.** Life requisites that potentially limit greater prairie chicken populations are the lack of tall and dense grass nesting cover or the lack of winter food (Prose 1985). The most important aspect of secure nesting cover lies in its structure rather than in plant species composition (Eng et al. 1988). A study on Fort Pierre National Grassland showed that prairie chickens generally nest at least 200 ft. from fence lines (Rice and Carter 1982). Of all the grouse, prairie chickens are the most granivorous (Hamerstrom 1950). High-energy grain from row-crops is an important winter food, and the birds may travel many miles to utilize it (Fredrickson 1990). This prairie grouse is a resident of Fort Pierre National Grassland (Peterson 1991) and the Bessey unit in the Nebraska Sand Hills (Mollhoff et al. 1993).

### **ESA Status and Other Organizational Rankings**

<b>ESA Status</b>	<b>Conservation Status<sup>1</sup></b>
ESA (no status)	G4, N4; Nebraska – S3S4; South Dakota – S4; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** Fort Pierre National Grassland and Bessey Ranger District have high-structure grass for prairie chicken cover. Grassland on the former is interspersed with private



grain fields, and the latter has prairie that supports many food-bearing forbs and shrubs, such as rose and poison ivy. On the Fort Pierre National Grassland, many spring prairie chicken courtship display grounds have been noted close to prairie dog colonies (Fort Pierre National Grassland files) (Map 22).

This grouse is a management indicator species for the units mentioned above, as well as a Region 2 sensitive species. Prairie chickens are game birds in both South Dakota and Nebraska.

**Direct, Indirect, and Cumulative Effects.** Fort Pierre National Grassland is the only area that would be affected by rodenticide use and reduced prairie dog populations near active prairie chicken habitat.

Prairie chickens eat grain, and the potential exists for them to ingest zinc phosphide treated oats. Observations of wild birds in a wide variety of situations where this rodenticide had been placed have shown that some birds can be killed and others are unaffected (Tietjen 1976). However, prairie dog colonies are not preferred prairie chicken feeding areas, which lowers the probability of bait ingestion. Also, if safety precautions and label directions are followed during application, operations can be carried out without undue risks to nontarget species (Tietjen 1976). Factors that contribute to lower hazards are the food habits of nontarget species, the relatively low concentration of zinc phosphide in the bait, the small amount of bait applied per unit area, the widely scattered bait distribution pattern and the short time most of the bait is exposed (Tietjen 1976). Disturbances created by crews applying rodenticide may temporarily displace prairie chickens from the vicinity of the treated colonies, further reducing non-target risks.

Removing prairie dogs from an area could produce high-structure nesting cover if the range site is productive and if subsequent grazing is not too heavy. Some range sites with prairie dog colonies, such as thin claypans, are probably not capable of producing enough grass cover to provide secure nest sites for prairie chickens.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE GREATER PRAIRIE CHICKEN**

### **Alternative 1: (No Action) Current LRMP Direction**

**Fort Pierre N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

**Alternative 2:**

**Fort Pierre N.G.** The biological determination for greater prairie chickens under Alternative 2 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

**Rationale:** The Fort Pierre National Grassland currently has approximately 1340 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could remove prairie dogs from the Fort Pierre National Grassland.

Rodenticide application could allow sod-bound grass on the more productive range sites to revert to a mixture of grasses that may produce some additional high and dense nesting and brood-rearing cover for greater prairie chickens over the long-term. There is a possibility an additional 1,340 acres previously occupied by prairie dogs could be managed as high cover areas if Alternative 2 were selected.

Individual prairie chickens could die from ingesting rodenticide bait, but the likelihood is so remote as to be a discountable effect.

**Alternative 3:**

**Fort Pierre N.G.** The biological determination for greater prairie chickens under Alternative 3 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

**Rationale:** The Fort Pierre National Grassland currently has 1340 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate approximately 470 acres of prairie dog colonies within the 0.25-mile zone leaving nearly 870 acres of colonies remaining. The predicted range of prairie dog colonies across the grassland is estimated to be between 1,100 and 1,400 acres by the year 2012.

Rodenticide application could allow sod-bound grass on the more productive range sites to revert to a mixture of grasses that may produce some additional high and dense nesting and brood-rearing cover for greater prairie chickens over the long-term. In the long term, the number of active acres of prairie dog colonies will undergo a small increase and there will be no detectable change in habitat for the prairie chicken.

Although the probability is remote, individual prairie chickens could die from ingesting rodenticide bait.

**LONG-BILLED CURLEW***Numenius americanus*

**Distribution and Status.** Long-billed curlews breed from interior British Columbia and southern Alberta through southern Manitoba, south to central California and east to western North Dakota, central South Dakota, central Nebraska, western Kansas, northeastern New Mexico, and northern Texas (Dechant et al. 2003b). All of the units of the NNF are within there breeding range.

Long-billed curlews are ranked as secure both globally and nationally. Population declines in the western U.S. are local, not widespread, and they are apparently declining in Utah (Nature

Serve 2003). In South Dakota, they are listed as a fairly common summer resident in suitable habitat west of the Missouri River (SDOU 1991).

**Habitat.** Long-billed curlews use expansive, open, level to gently sloping or rolling grasslands with short vegetation such as shortgrass or recently grazed mixed-grass prairie. Proximity to water may be an important factor in habitat selection (Dechant et. al. 2003b). This type of habitat certainly exists within prairie dog colonies, especially in areas that have recently been colonized.

Grassland structure is an important component of long-billed curlew habitat. Long-billed curlews in Nebraska used areas in which 75% of the total vertical vegetation density (number of plant contacts with a thin rod inserted vertically into the canopy) was found at heights <10 cm (Dechant et. al. 2003b). Preference for areas in which vegetation density is concentrated near ground level may be important in terms of the feeding behavior of long-billed curlews or their ability to see potential predators.

Long-billed curlew's breeding season diet includes insects (especially grasshoppers, but also beetles and butterflies; and other invertebrates, berries, toads, bird eggs, and nestling birds. Curlews forage in grasslands, cultivated fields, stubble fields, wet meadows, prairie dog (*Cynomys*) colonies, and occasionally along wetland margins (Dechant et. al. 2003b). The SDOU (1991) states the fall migration occurs first week of August with the latest date a long-billed curlew was seen in South Dakota as Oct 25.

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G5, N5B, N5N; Nebraska – S3; South Dakota – S3B; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** Maps 23-26 display the recorded locations of long-billed curlews on the various units of the NNF. They have been found on all of the National Grasslands of the NNF.

All of the grassland areas of the Buffalo Gap National Grassland, Fort Pierre National Grassland, & Oglala National Grassland are potential long-billed curlew habitat depending on the slope, potential production & grazing intensity. The long-billed curlew, in most cases, will be found on the moderate to heavily grazed sites. It is not uncommon to find them in and around prairie dog colonies (Maps 23-26)

**Direct, Indirect, and Cumulative Effects.** The long-billed curlew feeds primarily on insects and other invertebrates. They will not eat the poison grain and are not susceptible to being poisoned by the zinc phosphide treated grain. The SDOU (1991) states the fall migration for them occurs first week of August with the latest date a long-billed curlew was seen in South Dakota as Oct 25. It would be rare for a long-billed curlew to be present after October 1<sup>st</sup> when the rodenticide application will take place.

Long-billed curlews could be killed or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a long-billed curlew for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a curlew. The fact that the long-billed curlew



is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

The long-billed curlew is not dependent on prairie dog colonies for its existence. Breeding habitat for the long-billed curlew is low to moderate structure midgrass prairie. This habitat can be found on or off prairie dog colonies depending on many factors, like precipitation, soils, etc. On the NNF the overriding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines within the LRMP establish levels at which grassland structure will be managed by geographic area.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE LONG-BILLED CURLEW**

### **Alternative 1: (No Action) Current LRMP Direction**

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### **Alternative 2:**

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for long-billed curlews under Alternative 2 for is: *"may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"*.

**Rationale:** With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

The long-billed curlew feeds primarily on insects and other invertebrates. They do not eat the grain and are not susceptible to being poisoned by the zinc phosphide treated grain. Also, the majority of the birds migrate out of the study area before October 1 (the first day rodenticide can be applied).

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a long-billed curlew, but the effects will still be discountable (see the above discussion). Shooting

within the one mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

Rodenticide use and reduced prairie dog populations could allow sod-bound grass on the more productive range sites to revert to a mixture of grasses that may produce some additional high cover that may be avoided by long-billed curlews over the long-term.

### Alternative 3:

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for long-billed curlew under Alternative 3 is: *"may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction habitat until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

The long-billed curlew feeds primarily on insects and other invertebrates. They do not eat the grain and are not susceptible to being poisoned by the zinc phosphide treated grain. Also, the majority of the birds migrate out of the study area before October 1 (the first day rodenticides can be applied).

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a long-billed curlew, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. This will not have any measurable effect on overall long-billed curlew populations.

Rodenticide use and reduced prairie dog populations could allow sod-bound grass on the more productive range sites to revert to a mixture of grasses that may produce some additional high cover that may be avoided by long-billed curlews over the long-term.

## GREATER SAGE GROUSE

*Centrocercus urophasianus*

**Distribution and Status.** Currently, greater sage grouse occur in somewhat disjunct ranges within suitable sagebrush habitats in central Washington through southern Idaho, much of Montana, extreme southeastern Alberta and southwestern Saskatchewan, south to the southwestern corner of North Dakota, northwestern and southwestern South Dakota, most of Wyoming, western Colorado, and portions of Utah, and west to Nevada, extreme eastern California, and southeastern Oregon (Rowland 2004).

The sage grouse is relatively common in the core of its range, but range has contracted significantly (now extirpated in five states and one province). Populations have declined 45 to 80 per cent since the 1950s and by an average of 33 per cent across ten states (essentially



rangewide) since 1985. The birds are threatened by loss, fragmentation and degradation of sagebrush habitat. (NatureServe 2004). In South Dakota, they are listed as a locally uncommon permanent resident of the far west on the sagebrush prairies (Tallman et al. 2002). The only occurrence on the NNF is in the Fall River West Geographic Area (FRWGA).

**Habitat.** Sagebrush shrubland is the habitat of the sage grouse. Sagebrush is the primary food of sage grouse during the summer and is almost the exclusive diet during winter. Almost all sage grouse activity occurs in sagebrush or in meadows or openings adjacent to sagebrush.

Sage grouse are unique in that they lack a muscular gizzard like other gallinaceous birds and cannot grind and digest seeds (Wallestad 1975), so they feed exclusively on soft material, mostly sagebrush during the winter and a combined diet of sagebrush and various forbs during the spring and summer. Juveniles initially consume a diet of forbs and invertebrates.

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G4, N4; Nebraska – S1; South Dakota – S2; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** The only sagebrush habitat large enough to have a population of sage grouse occurs in the West western part of the Buffalo Gap National Grassland. Within this geographic area, the LRMP identifies a 45,760 acre area as 3.64 Special Plant and Wildlife Habitat: Sage Grouse. Within this area, the sage grouse is identified as a management indicator species. Sage grouse sightings on the west half of the Buffalo Gap National Grassland are displayed in Map 27. One sage grouse display ground has been monitored in the area since 1991, and the maximum number of birds observed on the display ground each year is listed below.

Year	# of Birds
1991	17
1992	8
1993	4
1994	4
1995	6
1996	10
1997	10
1998	11
1999	14
2000	11
2001	4
2002	4
2003	0
2004	0

No birds have been seen on the display ground since 2002.

**Direct, Indirect, and Cumulative Effects.** FRWGA is the only area that would be affected by rodenticide use and reduced prairie dog populations near sage grouse habitat.



Sage grouse are a year-around resident of the grasslands, so they could be exposed to the zinc phosphide treated grains. They lack a muscular gizzard and cannot grind and digest seeds. They do not eat grain and are not susceptible to being poisoned by the zinc phosphide treated grain.

Sagebrush shrubland is the habitat of the sage grouse. Prairie dogs avoid the sagebrush habitat because it is difficult for them to cut it down, their viewing distance is reduced and they are more susceptible to predators. One of the prairie dog colonies in this area is surrounded by sage brush and it has not appreciably expanded in the last 15 years.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE SAGE GROUSE**

### **Alternative 1: (No Action) Current LRMP Direction**

**Buffalo Gap N.G:** The biological determination for sage grouse under Alternative 1 is: “*no impact*”.

Rationale: Sage grouse habitat only occurs on the FRWGA. The rest of the lands within the project area do not have enough sagebrush habitats to support sage grouse populations.

Sage grouse are a year-around resident of the FRWGA, so they could be exposed to the zinc phosphide treated grains. They lack a muscular gizzard and cannot grind and digest seeds. They will not eat grain and are not susceptible to being poisoned by the zinc phosphide treated grain.

With this alternative, it is predicted that there could be between 900 and 1800 acres of prairie dog colonies on the FRWGA by 2012. This is less than 2 % of the total area. Even if the prairie dogs did invade the sagebrush area, this would not be enough to effect the sage grouse population.

### **Alternative 2:**

**Buffalo Gap N.G:** The biological determination for sage grouse under Alternative 2 is: “*no impact*”.

Rationale: Sage grouse habitat only occurs on the FRWGA. The rest of the lands within the NNF do not have enough sagebrush habitats to support sage grouse populations.

Sage grouse are a year-around resident of the FRWGA, so they could be exposed to the zinc phosphide treated grains. They lack a muscular gizzard and cannot grind and digest seeds. They will not eat grain and are not susceptible to being poisoned by the zinc phosphide treated grain.

With this alternative, it is predicted that there could be between 300 and 400 acres of prairie dog colonies on the FFRD WGA by 2012. This is less than 1 % of the total area. Even if the prairie dogs did invade the sagebrush area, this would not be enough to affect the sage grouse population.

### **Alternative 3:**

**Buffalo Gap N.G.** The biological determination for sage grouse under Alternative 3 is: “*no impact*”.

Rationale: Sage grouse habitat only occurs on the FRWGA. The rest of the lands within the project area do not have enough sagebrush habitats to support a sage grouse population

Sage grouse are a year-around resident of the FRWGA, so they could be exposed to the zinc phosphide treated grains. They lack a muscular gizzard and cannot grind and digest seeds. They will not eat grain and are not susceptible to being poisoned by the zinc phosphide treated grain.

With this alternative, it is predicted that there could be between 600 and 800 acres of prairie dog colonies on the FFRD WGA by 2012. This is less than 1 % of the total area. Even if the prairie dogs did invade the sagebrush area, this would not be enough to effect the sage grouse population.

## **NORTHERN HARRIER**     *Circus cyaneus*

**Distribution and Status.** These hawks breed in the northern United States and Canada, and winter in the eastern and southern U.S., and in the western coastal mountains, south through Mexico and Central America (MacWhirter and Bildstein 1996) (Dechant 2003g). They are year-round residents of the central plains (MacWhirter and Bildstein 1996). Northern harriers are summer residents and rare winter visitors on Fort Pierre National Grassland, Buffalo Gap National Grassland, and Oglala National Grassland (Peterson et al. 1991, Graupman et al. 1991, Peterson 1993). They are residents of the Nebraska Sand Hills, including the Bessey Ranger District (Mollhoff et al. 1993).

**Habitat.** This slim hawk hunts by coursing low over the prairie, catching its prey with a sudden pounce (Sibley 2000). In summer, its foods are small- and medium-sized mammals, primarily rodents, birds (chiefly passerines and small waterbirds), reptiles, and frogs (MacWhirter and Bildstein 1996). In the north during winter, they consume *Microtis* voles almost exclusively (MacWhirter and Bildstein 1996). After killing, small mammals are sometimes eviscerated (MacWhirter and Bildstein 1996). Although harriers can nest in suitable marsh vegetation, they apparently preferred upland sites in North Dakota (Dubbert and Lokemoen 1977). But during the South Dakota Breeding Bird Atlas surveys, 60% of harrier nests were in marshes (Peterson 1995). In seeded fields in northcentral South Dakota and central North Dakota, harriers preferred tall, dense cover as upland nesting sites (Dubbert and Lokemoen 1977). They placed 52% of nests in cover more than about 24" tall. Forty-one percent of nests were in cover from about 12 in. to 24 in. tall. The nests were well concealed from the sides but open above. Undisturbed grasslands, especially with western snowberry (*Symphoricarpos occidentalis*) shrubs, were the locations for over half of 129 nests (Kantrud and Higgins 1992).

## **ESA Status and Other Organizational Rankings**

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G5 N5B, N5B; Nebraska – S3; South Dakota – S5B; Forest Service – Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** Maps 28-29 show some N. harrier sightings on the project areas. These birds have recently been added to the sensitive species list and are fairly common on all of the National Grasslands.

Northern harriers are likely to occur across all areas being considered for prairie dog management, and these raptors are known to be associated with prairie dog colonies in western South Dakota (Sharps and Uresk 1990). Since prairie dog colonies have short vegetation, and harriers use tall, dense vegetation for placing their nests, the hawks are most likely to use prairie dog colonies as sites to hunt for food.

**Direct, Indirect, and Cumulative Effects.** Harriers are likely to be present in some areas when rodenticide baits are applied. The hawks do not eat grain so they would not be at risk from direct poisoning. The possibility of secondary poisoning is remote, since most poisoned prairie dogs die in their burrows. Harriers are also known to eviscerate prey before eating, thus removing the dead prairie dog's digestive tract where residual poison is likely to be found. Crews applying rodenticide might disturb harriers, but this would be a temporary occurrence. The birds would continue hunting for food nearby.

An indirect effect of rodenticide use would be the loss of prairie dog colonies as foraging areas, where harriers could prey on vertebrates or invertebrates among the short grass cover. With the prairie dogs removed from the area, however, the grass would likely grow taller. Eventually litter would build up, and the parts of the area would become habitat for voles. Rather than creating a net loss of foraging areas for northern harriers, prairie dog rodenticide treatment would substitute one type of prey for another. If cattle stocking were light on areas where prairie dogs had been treated, tall, dense cover would develop and could be used as harrier nesting cover.

Northern harriers could be shot or injured by prairie dog shooters, but this would be rare and deliberate since they don't regularly sit on prairie dog mounds and it would be difficult to mistake them for prairie dogs, even at a distance. It is always possible for an unethical prairie dog shooter to kill a harrier. The fact that the northern harrier is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Shooting would reduce the number of prairie dogs in a colony. Harriers feed mostly on animals smaller than prairie dogs, and these food items would not be affected by the change in prairie dog numbers. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

Cumulative effects that could harm harriers include plowing prairies to produce mono-typical croplands and draining wetlands that the birds use for nesting or foraging. Over-grazing by livestock results in low grass structure with no cover or litter for voles, which are an important harrier food source. Intentional shooting of harriers by individuals who think they are reducing predation on game birds or mammals also occurs.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE NORTHERN HARRIER**

**Alternative 1:** (No Action) Current LRMP Direction



**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for northern harriers under Alternative 1 is: *"no impact"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 53,000 and 102,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticides will be applied to less than 300 acres each year (Table 2).

Harriers are likely to be present in some areas when rodenticide baits are applied. The hawks do not eat grain so they would not be at risk of primary poisoning. The possibility of secondary poisoning is remote.

Prairie dog colonies provide harrier prey. However, grass structure is likely to increase when prairie dogs are reduced, which provides voles for prey and, possibly, potential nesting sites. Positive and negative aspects of prairie dog management to harriers would tend to offset.

Alternative 1 will increase the number of prairie dog colonies, and it is assumed that with more prairie dogs there will be more prairie dog shooters. This does increase the chance of a prairie dog shooter coming into contact with a northern harrier, but the effects will be discountable (see the above discussion).

#### **Alternative 2:**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for northern harriers under Alternative 2 is: *"no impact"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Harriers are likely to be present in some areas when rodenticide is applied. The hawks do not eat grain so they would not be at risk of primary poisoning. The possibility of secondary poisoning is remote.

Prairie dog colonies provide harrier prey. However, grass structure is likely to increase when prairie dogs are eliminated, which provides voles for prey and, possibly, potential nesting sites. Positive and negative aspects of prairie dog management to harriers would tend to offset.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a northern harrier, but the effects will still be discountable (see the above discussion). Some limited and regulated shooting within the one mile boundary management zone in Conata Basin may be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

#### **Alternative 3:**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for northern harriers under Alternative 3 is: *"no impact"*.

**Rationale:** With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone.

Harriers are likely to be present in some areas when rodenticide is applied. The hawks do not eat grain so they would not be at risk of primary poisoning. The possibility of secondary poisoning is remote.

Prairie dog colonies provide harrier prey. However, grass structure is likely to increase when prairie dogs are reduced, which provides voles for prey and, possibly, potential nesting sites. Positive and negative aspects of prairie dog management to harriers would tend to offset.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a northern harrier, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. There will be no measurable effect on overall northern harrier populations.

## **FERRUGINOUS HAWK**      *Buteo regalis*

**Distribution and Status.** The ferruginous hawk is an open-country raptor that inhabits grasslands, shrub steppes, and deserts in the central and western part of North American (Bechard and Schmutz 1995)(Jasikoff 1982). These hawks are a summer resident and rare winter visitor on all the units included in this evaluation (Peterson et al. 1991, Graupman et al. 1991, Mollhoff et al. 1993, and Peterson 1993). The species was petitioned for listing under the Endangered Species Act in 1991 but was rejected (Ure et al. 1991). Cultivation of the prairie, grazing, poisoning small mammals, along with mining and fire in nesting habitats, were factors that caused ferruginous hawk declines (Olendorff 1993), with cultivation being the most serious.

**Habitat.** Ferruginous hawks are well adapted to semiarid grasslands of the Great Plains and are specialized for hunting grassland rodents and lagomorphs (Johnsgard 1990). Their primary prey are rabbits (*Lepus* spp.), ground squirrels (*Spermophilus* spp.), and prairie dogs (*Cynomys* spp.) (Bechard and Schmutz, 1995). After killing, prey is eviscerated routinely, which may retard degradation of the carcass (Schmutz et al. 1989). These hawks place their nests-- constructed of sagebrush stems, sticks, twigs, or ground debris (Bechard and Schmutz 1995)--in trees and shrubs (49%), on cliffs (21%), on utility structures (12%), or on ground outcrops (10%) (Olendorff, 1993).

### **ESA Status and Other Organizational Rankings**

<b>ESA Status</b>	<b>Conservation Status<sup>1</sup></b>
ESA (no status)	G4, N4B, N4N; Nebraska – S2; South Dakota – S4B; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>



**Existing Conditions.** Maps 30-33 show ferruginous hawk sightings on the project areas. Ferruginous hawk observations have been well distributed across Oglala National Grassland, Buffalo Gap National Grassland and Fort Pierre National Grassland. The birds are seen both on and off prairie dog colonies, although the majority of observations have been off colonies.

Nests were found on Oglala National Grassland in 1988, 1994, 1996, 2003 and 2004. The 2003 nest was about five miles from a prairie dog colony. The 2004 nest was approximately 10 miles from a prairie dog colony.

On the west half of Buffalo Gap National Grassland, one nest was observed in 2002, 2003, and 2004; none were within one mile of a prairie dog colony. In the past, up to five nests have been found in a single year there, even when acres covered by prairie dog colonies were less than they are today.

These hawks are currently sighted on the east half Buffalo Gap National Grassland on a frequent basis, although nests have not been documented recently. Five nests were recorded in 1991, four of which were in Conata Basin. All of those nests were within a half-mile of prairie dog colonies.

Ferruginous hawks are fairly common on Fort Pierre National Grassland, and are often seen on prairie dog colonies. Adult hawks were spotted at two tree nests in spring 2004. One nest was 1.75 mile from a prairie dog colony. The other was over three miles from a colony. All nests that have been observed on this grassland in the past have been in trees. They have been scattered across the area in drainages where cottonwoods grow, not in the northeast grassland near the large complex of prairie dog colonies.

**Direct, Indirect, and Cumulative Effects.** Ferruginous hawks do not eat grain, so there should be no risk of primary poisoning. Secondary effects from consuming recently poisoned prairie dogs are unlikely, since carcasses are routinely eviscerated. Eagles and owls that were routinely fed zinc phosphide-killed rodents or rabbits showed no ill effects (Tietjen 1976). Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Considering indirect effects, the area over which ferruginous hawks can effectively hunt for food may be diminished as prairie dog colonies are treated with rodenticide and the sites grow taller grass. Ferruginous hawks feed on prairie dogs, cotton-tailed rabbits, and ground squirrels, all of which are often more common on prairie dog colonies than off. However, the alternatives do not call for eradication of all prairie dog colonies in an area. Ferruginous hawks are a soaring raptor, and they are mobile in searching for food. The hawks may be able to adjust their hunting patterns to forage on remaining prairie dog colonies. The exception would be seen under Alternative 2, when all prairie dog colonies could be treated with rodenticide. Ferruginous hawks are regularly seen on Fort Pierre National Grassland prairie dog colonies, although their nests there generally do not occur in the northeast part of the grassland near the greatest concentration of prairie dogs.

Rodenticide use and reduced prairie dog populations will result in fewer options for productive ferruginous hawk hunting areas. However, prairie dog colonies are not the sole--or even the major--source of food in some parts of South Dakota. The north-central part of the state east of



the Missouri River has many confirmed ferruginous hawk nests (Peterson 1995) but is not a major prairie dog area.

Ferruginous hawks could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a ferruginous hawk for a prairie dog, even at long distances. It is always possible for an unethical prairie dog shooter to kill a ferruginous hawk. The fact that they are a protected species and it is against the law to kill or harass them should be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Shooting will obviously reduce the number of prairie dogs on a colony, but enough rodents and rabbits should remain as a food source for these raptors. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area. Hawks can also learn that gunfire means easy prey availability, and the birds may be attracted to it (Bechard and Schmutz, 1995).

Harmful cumulative effects include plowing private rangelands and prairie to produce grain. Rodenticide application on private lands also adds to the effects. Fragmentation of the mixed-grass prairie by cropland and tree plantings would favor other raptor species that might compete with ferruginous hawks for food or space. Intentional shooting of hawks by individuals who think they are reducing predation on game birds or mammals also occurs.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE FERRUGINOUS HAWK**

### **Alternative 1: (No Action) Current LRMP Direction**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### **Alternative 2**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for ferruginous hawks under Alternative 2 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Rationale: With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Ferruginous hawks do not eat grain, so there should be no risk of primary poisoning. Secondary effects from consuming recently poisoned prairie dogs are unlikely, since carcasses are routinely eviscerated.

Ferruginous hawks are not dependent on prairie dogs for their survival, but the reduction in acreage of prairie dog colonies could be detrimental to ferruginous hawks in the area because of the decreased prey base, but this can not be quantified. Ferruginous hawks are a soaring raptor, and they are mobile in searching for food. The hawks may be able to adjust their hunting patterns to forage on remaining prairie dog colonies or other types of prey.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a ferruginous hawk, but the effects will still be discountable (see the above discussion). Shooting within the one mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

### Alternative 3

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for ferruginous hawks under Alternative 3 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction habitat until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Ferruginous hawks do not eat grain, so there should be no risk of primary poisoning. Secondary effects from consuming recently poisoned prairie dogs are unlikely, since carcasses are routinely eviscerated. The reduction in acreage of prairie dog colonies could be detrimental to ferruginous hawks in the area because of the decreased prey base, but this can not be quantified. The alternative does not call for eradication of all prairie dog colonies in an area. Ferruginous hawks are a soaring raptor, and they are mobile in searching for food. The hawks may be able to adjust their hunting patterns to forage on remaining prairie dog colonies.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a ferruginous hawk, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. These actions will not have any measurable effect on overall ferruginous hawk populations.

### CHESTNUT-COLLARED LONGSPUR *Calcarius ornatus*

**Distribution and Status.** Chestnut-collared longspurs breed from southern Alberta to southern Manitoba, south to west central Colorado, and east through North Dakota and South Dakota to western Minnesota (Dechant et. al. 2003c). They winter from northern Arizona, central &



northern New Mexico, eastern Colorado, and central Kansas south into Mexico (DeGraff et al. 1991).

The chestnut-collared longspur is listed as “secure” both globally and nationally. There is some indication of reduction of historic breeding and winter ranges and long-term population declines. Elimination of prairie habitat by cultivation and conversion to urban development is listed as the primary threat. Long term population declines are likely to continue as native rangeland is converted to cropland (Nature Serve 2003). All of the units in the project area are within their breeding range with the exception of the Sandhills units (Bessey Ranger District, Samuel R. McKelvie National Forest) (Dechant et. al. 2003c). The USFS Region 2 state with the highest average relative abundance of chestnut-collared longspurs is South Dakota, with 21.98 individuals (Sedgwick 2004a).

**Habitat.** Chestnut-collared longspurs use level to rolling mixed grass and shortgrass uplands, and, in drier habitats, moist lowlands. They prefer open prairie and avoid excessively shrubby areas. Grasslands with dense litter accumulations are avoided (Dechant et. al. 2003c).

In their literature review Dechant et al. (2003c) makes no mention of chestnut-collared longspurs using prairie dog colonies. They prefer native pastures with fairly short vegetation and sparse litter accumulation. This type of habitat certainly exists within some prairie dog colonies, especially in areas that have recently been colonized. In dry, sparse shortgrass prairie, light to moderate grazing is more appropriate, and heavy grazing or overgrazing may be detrimental to chestnut-collared longspurs (Dechant et. al. 2003c). In the interior areas of prairie dog colonies, especially during a drought, the levels of cover in prairie dog colonies are comparable to heavy grazing or overgrazing and are probably avoided by chestnut-collared longspurs.

#### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G5, N5B, N5N; Nebraska – S2; South Dakota – S4B; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** A conservation assessment for the chestnut-collared longspur was prepared for the Forest Service, October 7, 2004 by Sedgwick, J.A. (2004a)

**Existing Conditions.** Maps 34-35 display the recorded locations of chestnut-collared longspurs on the various units in the project area. They have only been documented on the west half of the Buffalo Gap National Grassland, Oglala National Grassland, and Ft. Pierre National Grassland.

All of the grassland areas with level to rolling hills of the Buffalo Gap National Grassland, Fort Pierre National Grassland, & Oglala National Grassland are potential chestnut-collared longspur habitat. The chestnut-collared longspur, in most cases, will be found on the moderately to heavily grazed sites. Only one of the sightings was within a prairie dog colony.

**Direct, Indirect, and Cumulative Effects.** The chestnut-collared longspur feeds primarily on grass seed and some insects, which are gleaned from the ground. If they are in the area during the



rodenticide application, they would be susceptible to being poisoned by the zinc phosphide treated grain.

The majority of these birds migrate in September. The latest date a chestnut-collared longspur was seen in South Dakota is Oct 13 (SDOU 1991). The earliest rodenticides can be applied to the NNF is Oct 1 (U. S. Forest Service 2001c). So, the majority of the birds have migrated before rodenticides can be used.

Chestnut-collared longspurs could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a chestnut-collared longspur for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a longspur. The fact that chestnut-collared longspurs and all song birds are a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

The chestnut-collared longspur is not dependent on prairie dog colonies for its existence. Breeding habitat for chestnut-collared longspur is low to moderate structure mid grass prairie. This habitat can be found on or off prairie dog colonies depending on many factors, like precipitation, site potential, and length of time prairie dogs have inhabited the area. In the project area, the overriding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines within the LRMP establish levels at which grassland structure will be managed by geographic area.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE CHESTNUT-COLLARED LONGSPUR**

### **Alternative 1: (No Action) Current LRMP Direction**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for chestnut-collared longspur under Alternative 1 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

With the implementation of this alternative it is predicted that there could be between 53,000 and 102,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticides will be applied to less than 300 acres of colonies each year (Table 2).

There is always a chance of a chestnut-collared longspur ingesting rodenticide bait. Under this alternative, rodenticide use would be minimal and the chance of an individual chestnut collared longspur being killed is low. The probability of this happening is lessened by the fact that most of the birds will have left the area before October 1, which is the earliest date rodenticide can be applied under LRMP direction. So, it is unlikely that rodenticide use and other activities outlined in Alternative 1 would have any affect on the chestnut-collared longspur population in the area.

There is a possibility that in a drought the vegetation on the prairie dog colonies could reach a threshold in which chestnut-collared longspurs would avoid the area. Even if all of the prairie dog colonies were uninhabitable by chestnut-collared longspurs, there could still be more than

685,000 acres of national grassland that is within their breeding range that could be managed as suitable longspur habitat. LRMP sets objectives for grassland structure and the assumption is these objectives will be met and there will be adequate habitat for chestnut-collared longspurs.

## **Alternative 2:**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for chestnut-collared longspur under Alternative 2 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Rationale: With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Under this alternative, there would be increased rodenticide use and the chance of an individual chestnut-collared longspur ingesting bait is higher than in the other alternatives. The probability of this happening is lessened by the fact that most of the birds will have left the area before the rodenticide use begins. So, it is unlikely that the program outlined in Alternative 2 will have a large effect on the overall chestnut-collared longspur population in the area.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a chestnut-collared longspur, but the effects will still be discountable (see the above discussion). Shooting within the one mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

There is a possibility that in a drought the vegetation on the prairie dog colonies could reach a threshold in which chestnut-collared longspurs would avoid the area. Even if all of the prairie dog colonies were uninhabitable by chestnut-collared longspurs, there could still be more than 773,000 acres of national grassland that is within their breeding range that could be managed for enhanced habitat suitability for longspurs. The LRMP sets objectives for grassland structure and the assumption is these objectives will be met and there will be adequate habitat for chestnut-collared longspurs.

## **Alternative 3:**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for chestnut-collared longspurs under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.



Under this alternative, there would be increased rodenticide use and the chance of individual chestnut-collared longspurs ingesting rodenticide bait is increased. Timing restrictions on the application of rodenticide make large-scale poisoning of longspurs improbable, because most of the birds will have left the area before rodenticides are used. So, it is unlikely that the rodenticide use outlined in Alternative 3 will have a large effect on chestnut-collared longspur populations that use the area seasonally.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a chestnut-collared longspur, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colony in this analysis. These actions will not have any measurable effect on overall chestnut-collared longspur populations.

There is a possibility that in a drought the vegetation on the prairie dog colonies could reach a threshold in which chestnut-collared longspurs would avoid the area. Even if all of the prairie dog colonies were uninhabitable by chestnut-collared longspurs, there could still be more than 750,000 acres of national grassland that is within their breeding range that could be managed for enhanced habitat suitability for longspurs. The LRMP sets objectives for grassland structure and the assumption is these objectives will be met and there will be adequate habitat for chestnut-collared longspurs.

#### **MCCOWN'S LONGSPUR** *Calcarius mccownii*

**Distribution and Status.** McCown's longspurs breed from southern Alberta and southern Saskatchewan, south through Montana, eastern and central Wyoming, and northcentral Colorado, and east to western Nebraska, northcentral South Dakota and southwestern North Dakota (Dechant et. al. 2003d). In Region 2 of the Forest Service, they commonly breed only on the Pawnee National Grassland in Colorado and the Thunder Basin National Grassland in Wyoming (Sedgwick 2004b).

Most populations appear to be stable or increasing, but due to a historical long-term decline in abundance on both their breeding and wintering grounds, this species is ranked by various state, federal, and private conservation organizations as a grassland "species of concern", "high priority", "imperiled", with "pressing needs", "state imperiled", or a species of "conservation concern" (Sedgwick 2004b). In South Dakota, they're listed as a rare migrant through the western tier of counties (SDOU 1991). In Nebraska, breeding has been documented in southern Sioux County (Johnsgard 1979).

**Habitat.** McCown's longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). They breed in shortgrass prairie; especially where vegetation coverage is sparse due to low soil moisture or heavy grazing, or where it is interspersed with shrubs or taller grasses. Blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) are dominant plants in nesting (Sedgwick 2004b).

There has been no research on whether or not McCown's longspurs specifically prefer the habitat created by prairie dogs (Sedgwick 2004b). Certainly, areas used by prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur within the study area.



## ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G4, N4B, N4N; Nebraska – S3; South Dakota – SUB; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** A conservation assessment for the McCown's longspur was prepared for the Forest Service, October 13, 2004 by Sedgwick, J.A.

**Existing Conditions.** Suitable habitat for the McCown's longspurs within the project area is the long-term low structure grasslands. All grassland areas on Oglala National Grassland are potential McCown's longspur habitat, depending on management. Prairie dog colonies may be the best long-term habitat within the area.

There have not been any documented McCown's longspur sightings on Oglala National Grassland in recent years. The last McCown's longspur sited on the Oglala National Grassland was in 1994. The Oglala National Grassland is very close to both breeding and wintering population of McCown's longspurs (Dechant et. al. 2003d) (Sedgwick 2004b). .

**Direct, Indirect, and Cumulative Effects.** Oglala National Grassland is the only area that would be affected by rodenticide use and reduced prairie dog populations near McCown's longspur habitat.

The diet of McCown's longspurs consists primarily of grass and forb seeds and insects, including grasshoppers, moths, beetles, and ants. McCown's are primarily granivorous during winter (Sedgwick 2004b). If they are in the area during rodenticide applications, they would be susceptible to primary poisoning if they ingest rodenticide bait. McCown's longspurs fall departure dates from the breeding grounds are variable, extending from August to late September (Saskatchewan, Montana). A few individuals may linger until early to mid-October (Saskatchewan, Colorado). Early arrival dates on the wintering grounds occur from late September (New Mexico), to early October (Arizona), to late October (Texas). They arrive in Mexico by November (Sedgwick 2004b). Although rare, migrating birds could be in the area while rodenticide application is taking place.

McCown's Longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). Blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) are dominant plants in nesting (Sedgwick 2004b). The McCown's longspur is not dependent on prairie dog colonies for its existence, but prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur within the Oglala National Grassland. The over riding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines within the LRMP establish the desired levels of grassland structure.

McCown's longspurs could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a McCown's longspurs for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a longspur. The fact that the McCown's longspurs and other song birds are protected and it is against the law to kill or harass them should

also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Also, on the Oglala National Grassland, shooting regulations are the same for all 3 alternatives and nothing is changed by this decision from LRMP direction.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE MCCOWN'S LONGSPUR**

### **Alternative 1: (No Action) Current LRMP Direction**

**Oglala N.G.** The biological determination for McCown's Longspurs under Alternative 1 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With this alternative, it is predicted that there could be between 3,300 and 6,800 acres of prairie dog colonies on the Oglala National Grassland by 2012, and it is anticipated that rodenticides will be applied to less than 100 acres each year (Table 2).

Regulated shooting would continue and reduce prairie dog densities outside ferret reintroduction habitat, and the Forest Service defers to state guidance on any future actions to regulate prairie dog shooting in these areas.

There is always a chance of a McCown's longspur eating rodenticide bait. Under this alternative, there will be very limited use of rodenticides and the chance of an individual McCown's longspur being unintentionally poisoned is very low. The probability of this happening is lessened by the fact that there are very few McCown's longspurs in the area.

McCown's Longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). The McCown's longspur is not dependent on prairie dog colonies for its existence, but prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur. With this alternative, it is predicted that there could be between 3,300 and 6,800 acres of prairie dog colonies on these units by 2012. This could be beneficial to any McCown's longspurs in the area because it would produce long term habitat characteristics preferred by the species.

### **Alternative 2:**

**Oglala N.G.** The biological determination for McCown's Longspurs under Alternative 2 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With this alternative, it is predicted that there could be less than 100 acres of prairie dog colonies on the Oglala National Grassland by 2012, and it is anticipated that rodenticides will be applied to 750 acres each year (Table 2).

Some limited and regulated shooting could reduce prairie dog densities outside ferret reintroduction habitat, and the Forest Service defers to state guidance on any future actions to regulate prairie dog shooting in these areas.

There is always a chance of a McCown's longspur eating rodenticide bait. While implementing this alternative, there would be increased use of rodenticide, and the chance of an individual



McCown's longspur being unintentionally poisoned is higher than the other alternatives. The probability of this happening is lessened by the fact that there are very few McCown's longspurs in the area. So, it is unlikely that the rodenticide program outlined in Alternative 2 will have any lasting affects on the McCown's longspur population in the area.

McCown's Longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). The McCown's longspur is not dependent on prairie dog colonies for its existence, but prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur. Under this alternative, it is predicted that there could be less than 100 acres of prairie dog colonies on the Oglala National Grassland by 2012. These acres could be used by McCown's longspurs but the amount of prairie dog habitat is far below the levels in Alternative 1.

### **Alternative 3:**

The biological determination for McCown's longspurs under Alternative 3 is:

**Oglala N.G.** The biological determination for McCown's Longspurs under Alternative 3 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With this alternative, it is predicted that there could be between 1,400 and 1,800 acres of prairie dog colonies on the Oglala National Grassland by 2012, and it is anticipated that rodenticides will be applied to 410 to 510 acres each year.

Some limited and regulated shooting continues and would reduce prairie dog densities outside ferret reintroduction habitat, and the Forest Service defers to state guidance on any future actions to regulate prairie dog shooting in these areas.

There is always a chance of a McCown's longspur eating rodenticide bait. Under this alternative, there would be increased use of rodenticide, and the chance of an individual McCown's longspur being poisoned is higher than Alternative 1 but lower than Alternative 2. The probability of this happening is lessened by the fact that there are very few McCown's longspurs in the area. So, it is unlikely that rodenticide use as outlined in Alternative 3 will have any lasting affects on the McCown's longspur population in the area.

McCown's Longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). The McCown's longspur is not dependent on prairie dog colonies for its existence, but prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur. Under this alternative, it is predicted that there could be between 1,400 and 1,800 acres of prairie dog colonies on the Oglala National Grassland by 2012. These acres could be used by McCown's longspurs but is far below the levels anticipated under Alternative 1 but greater than Alternative 2.

### **SHORT-EARED OWL**     *Asio flammeus*

**Distribution and Status.** In North America, short-eared owls breed from Alaska and continental Canada, also including the southern Baffin Islands, south to central California, and east through



Kansas, eastern Oklahoma, eastern Ohio, Pennsylvania, Maryland, and Prince Edward Island (Dechant et al. 2003e).

This medium-sized owl of open country is a sensitive species in Region 2 and is a rare resident of Fort Pierre National Grassland (Peterson et al. 1991), Buffalo Gap National Grassland (Graupman et al. 1991), and Oglala National Grassland (Peterson 1993). It is a rare summer resident of the Nebraska Sandhills (Peterson et al. 1993). Partners in Flight list it as a species of continental concern in the prairie biome (Rich et al. 2004).

**Habitat.** The short-eared owl ranges over mid and tall grasses and marshes, often hunting during daylight (Sibley 2001). Small rodents, especially voles (*Microtis spp.*), compose a preponderance of its diet, and there have been strong shifts between years in the density and location of breeding owls, depending on fluctuating food resources (Wiggins 2004). The abundance of prairie voles in central South Dakota was positively correlated with vegetation variables that measured the height and density of the vegetation and litter, although vole abundance seemed to be correlated with litter rather than the seral stage of prairie vegetation (Fritcher 1998). Short-eared owls build their nests on the ground in open country (Clark 1975), and nests found in the Dakotas have been in cover about 12 to 24 inches high and were well concealed from the sides (Duebbert and Lokemoen 1977). Clutch size is highly variable both within and between localities (Wiggins 2004), but it is known that clutch size is higher in years of food abundance (Clark 1975, Holt and Leasure 1993). Short-eared owls use prairie dog colonies in the spring, summer, and fall months (Sharps and Uresk 1990). The current and historical threats to viable short-eared owl populations in Region 2 can be ranked as follows: 1. Loss of native grassland and wetland habitats. 2. Degradation of existing grasslands due to overgrazing by livestock. 3. Degradation of grassland habitat due to fragmentation. (Wiggins 2004).

#### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G5, N5B, N5N; Nebraska – S2; South Dakota – S3B, S3N; Forest Service-Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** A conservation assessment for the short-eared owl was prepared for the Forest Service, September 22, 2004 by Wiggins, D. (2004)

**Existing Conditions.** Maps 36-38 display the recorded locations of short-eared owls on the various units in the project area. Short-eared owl habitat exists across the project area where adequate grass for nest sites and habitat for voles is present. Healthy prairie dog colonies have low grass structure with little or no high/dense vegetation cover to provide potential nest sites for medium-sized birds that nest on the ground, such as short-eared owls. The vegetation litter that supports populations of voles is not present, either, so there is no habitat for the owl's preferred prey. On the other hand, prairie dog colonies may provide diverse short-grass sites on which these owls may forage, although this is not an essential habitat element for them. In this respect, prairie dog colonies may be beneficial if adequate short-eared owl nesting cover and habitat for voles is available elsewhere.

**Direct, Indirect, and Cumulative Effects.** Short-eared owls do not eat grain, so primary poisoning resulting from ingestion of rodenticide bait is not an issue. There should be no secondary poisoning from consumption of gut contents of dead prairie dogs if specifications on the rodenticide label are adhered to and the few prairie dog carcasses that are found above ground are buried. This threat is lessened because most prairie dogs poisoned with zinc phosphide bait die inside their burrows (Tietjen 1976). Eagles and owls that were routinely fed zinc phosphide-killed rodents or rabbits showed no ill effects (Tietjen 1976). Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Because of abundant prey, it would be expected that short-eared owls would frequent prairie dog colonies for hunting, but they are not dependent on prairie dogs or prairie dog colonies for their survival in the area. In fact, voles are the owl's preferred prey, and would not be present on prairie dog colonies because vegetation litter that supports populations of voles is not present.

Where prairie dog colonies sit on low productivity range sites that are heavily grazed, removing the rodents will not provide habitat for short-eared owls. However, if high and dense grass cover develops after prairie dogs have been eliminated, short-eared owls could be indirectly benefited.

Short-eared owls could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a short-eared owl for a prairie dog, even at long distance. It is always possible for an unethical prairie dog shooter to kill an owl. The fact that the short-eared owl is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area. Shooting will obviously reduce the number of prairie dogs on a colony, but enough of the rodents should survive to maintain a foraging area for these raptors.

Cumulative effects that would be harmful to these owls include destruction of private rangelands and prairies through plowing, heavy grazing that leaves little residual cover, and land development for purposes other than habitat preservation or grazing.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE SHORT-EARED OWL**

### **Alternative 1: (No Action) Current LRMP Direction**

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for short-eared owls under Alternative 1 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

**Rationale:** With the implementation of this alternative, it is predicted that there could be between 53,000 and 102,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticides will be applied to less than 300 acres each year (Table 2).

Since short-eared owls do not eat grain and the threat of secondary poisoning is small, there is no direct effect from the use of rodenticide. Alternative 1 would result in increased acreages of prairie dog colonies. This would remove high/dense cover for short-eared nesting and litter for



vole habitat, the owl's preferred prey. Nesting and vole habitat are thought to be the most important factor in determining viability for this species.

Alternative 1 will increase the acreage of prairie dog colonies, and it's assumed that more prairie dogs will likely mean more prairie dog shooters. This does increase the chance of a prairie dog shooter coming into contact with a long-eared owl, but the effects are discountable (see the above discussion).

### **Alternative 2:**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for short-eared owls under Alternative 2 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of prairie dog colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Considering that short-eared owls do not eat grain and the threat of secondary poisoning is small, there is no direct effect from the use of rodenticide. Rodenticide use would reduce acres of prairie dog colonies. This could increase high/dense cover for short-eared owl nesting and litter for vole habitat, the owl's preferred prey.

Alternative 2 would likely increase the chance of a prairie dog shooter coming into contact with short-eared owls, but the effects would be discountable (see the above discussion). Some limited and regulated shooting within the one mile boundary management zone in Conata Basin would be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

### **Alternative 3:**

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for short-eared owls under Alternative 3 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of prairie dog colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Considering that short-eared owls do not eat grain and the threat of secondary poisoning is small, there is no direct effect from rodenticide use. Rodenticide use would reduce acres of prairie dog



colonies. This could increase high/dense cover for short-eared nesting and litter for vole habitat, the owl's preferred prey.

Alternative 3 would increase the chance of a prairie dog shooter coming into contact with a short-eared owl, but the effects would be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. These actions will not have any measurable effect on overall short-eared owl populations.

## BURROWING OWL

### *Athene cunicularia*

The following discussion often relies upon a thorough and recent species assessment completed by McDonald et al. (2004), and the references cited therein as well as additional references cited in this discussion.

**Distribution and Status.** The burrowing owl has a wide distribution in Canada, Mexico, and the western U.S. In the Great Plains, the species is found on all national grasslands and forests, although extirpated from the Sheyenne National Grassland in eastern North Dakota.

The historical range of the western burrowing owl once included the southern interior of British Columbia, east into Manitoba, south including Minnesota, Iowa and south-central Texas, but it is now extirpated from these areas (Figure 1). The historical range in Mexico is not known, though museums specimens in Mexico suggest that burrowing owls were once found in 28 of 32 states.

Most jurisdictions in Canada and the U.S. have shown overall declines in populations since the 1980s. No historical numbers of burrowing owls prior to the decline detected in the mid 1980s exist. The historical breeding distribution of burrowing owl was likely more extensive in the late 1800s when North America was covered by over 100 million acres of prairie dog colony habitat. This specific type of breeding habitat has been reduced to only 1.9 million acres, a substantial loss of breeding habitat.

Burrowing owls are currently undergoing a decline in range and abundance. The current breeding range of the western burrowing owl stretches from southern Alberta and Saskatchewan in Canada, south to central Mexico. The range has contracted in the east and north. Burrowing owls are currently undergoing a range wide decline in abundance.

A comprehensive, continental survey has not been conducted. A population estimate of the entire sub-species can only be derived from regional estimates. A survey of biologists in North America estimated that in 1992 there were 20,000-200,000 burrowing owls in the U.S., 2,000-20,000 in Canada, and an unknown number in Mexico. The broad estimates indicate a low confidence in their figures.

The number of breeding pairs of burrowing owls in Canada declined in the 1990's at a rate of over 20% per year. Saskatchewan's Operation Burrowing Owl program indicates a 95% decline from 1988 to 2000. A summary of findings in selected states in the U.S. indicate:

- 12-27% decrease in the number of breeding pairs in California in 1986-91
- 58% decline in western Nebraska from 1990-1996
- 89% vacancy of historical sites in 1998 in Wyoming

- No owls in the eastern third of North Dakota
- Uncommon to rare in the best habitats in North Dakota north and east of the Missouri River
- Widespread but uncommon in Arizona
- Mixed trends in New Mexico depending on the status of suitable habitat
- Restricted primarily to the panhandle in Oklahoma

There is virtually no published information on population estimates or trends of resident or migrant burrowing owls in Mexico. Most studies in Mexico are anecdotal, mainly distributional records, with only a few referring to its ecology.

The Forest Service considers the burrowing owl to be a sensitive species throughout the Great Plains. The U.S. Fish and Wildlife Service lists the burrowing owl as a National Bird of Conservation Concern and designates high-priority conservation status to the species in five Bird Conservation Regions relevant to USFS Region 2 (BCR 9, 11, 16, 17, and 18). The Colorado Division of Wildlife lists the burrowing owl as threatened, and the state wildlife agencies within Wyoming, South Dakota, Nebraska, and Kansas list the burrowing owl as a Species of Concern. The species is listed as endangered in Canada and threatened in Mexico.

The status of burrowing owls in the Great Plains of Region 2 is closely tied to that of prairie dogs because of the owls' requirement for mammal-excavated burrows. Continued loss of prairie dog colonies through active eradication, habitat loss, or disease will negatively impact burrowing owl population viability. Most of the states in Region 2 have tentative evidence for recent and ongoing declines, especially in the eastern portions of the Great Plains. Recent genetic studies, however, suggest that burrowing owls are panmictic (genetically connected by extensive dispersal) and do not yet show evidence of genetic isolation among populations. Strong dispersal ability means that reversal of unfavorable conditions should result in re-establishment of burrowing owls in suitable habitat via dispersal. Little is known about threats on the wintering grounds outside Region 2. Matrix-based demographic analyses suggest that the survival rate of adult females is a key element in the population dynamics of burrowing owls.

The ultimate causes of burrowing owl population declines remain unclear. For example, in Canada the documented proximate causes related to the decline are reduced productivity, high rates of pre-migratory mortality, permanent emigration, and low recruitment rates. Possible limiting factors across western North America include a reduction in prey availability and loss of habitat. Current productivity rates may be depressed by an overall low availability of prey due to control of insects and small mammals. Significant increases in productivity rates were achieved with supplemental feeding and noted during the availability of high prey densities. The loss of ephemeral wetlands used by small mammal prey and the cultivation of prey habitat alongside roadway and railways have also degraded burrowing owl habitat. The disappearance of prairie dogs across much of western North America dramatically decreased the availability of suitable nesting and roosting burrows. Additional threats to burrowing owls may include increased predation due to habitat fragmentation/degradation and an increase in avian predator perches (utility poles, etc) and nesting trees, illegal shooting, pesticides and other contaminants, and vehicle collisions.



**Habitat.** Burrowing owl habitat typically consists of open, dry, treeless areas on plains, prairies, and deserts. These areas are also occupied by burrowing mammals and other animals that provide nest burrows. The prairie dog is a keystone species in the Great Plains and its burrows were undoubtedly the principal breeding habitat of the burrowing owl. Indeed, the burrowing owl is often viewed as one of the unique species of a prairie dog colony. Although burrowing owls are capable of using badger and coyote burrows, and still use the burrows of Richardson's ground squirrel (*Spermophilus richardsonii*) in the far northern Great Plains, in grasslands without prairie dogs burrowing owls occur at very low densities.

Because burrowing owls spend most of their time on or in the ground and are extremely susceptible to predation, short vegetation structure is also a requirement to allow for better detection of predators and visibility of prey. Given this requirement for short vegetation, burrowing owls are commonly found in association with cattle, prairie dogs, and other grazers that clip vegetation.

Burrowing owls nest in clusters within prairie dog colonies. In small colonies, burrowing owls either nest closer together or there is a lower number of owls within a cluster. The number of burrowing owls within a cluster positively influences reproductive success. For example, burrowing owls may alert each other to predators. In small colonies where owls nest at high densities, nests may be successful but they fledge fewer young perhaps due to competition with neighboring owls. In prairie dog colonies, burrowing owl reproductive success has been most strongly correlated with active prairie dog burrow densities and the number of nesting pairs. At the prairie dog colony scale, colonies that have enough desirable habitats to allow for greater mean spacing of nests allow early arriving nesting pairs to select these colonies and to achieve greater reproductive success. The key element is colony size. Larger prairie dog colonies fledge more young than small colonies. Lower burrowing owl pair densities which are found in larger colonies have greater mean egg clutch sizes.

The total extent of burrowing owl habitat loss in western North America is not known. The open grasslands of the Great Plains eco-region occur from southern Canada south to central Mexico encompassing 19% of the total land cover of North America. Of the several million square miles of the central grasslands of North America, 28% is in Canada, 58% is in the U.S. and another 14% is found in Mexico. However, less than 25% of the original grasslands remain as native vegetation in Canada and the U.S., and in some states and provinces as little as 1% remains. Grassland patches in Mexico were originally widely distributed throughout several ecosystem types, but most grassland has since disappeared through human activities. Regions of suitable grasslands and desert habitat occur west of the continental divide, although the relatively high density of human activity especially in western coast states exerts tremendous pressure towards conversion of suitable habitat to agriculture or urban development. Since burrowing owls require the open habitats that are also preferred for agriculture and development, continued conversion of land will likely lead to further declines of owls in those areas.

Burrowing owls hunt by ground foraging, hovering, from a perch or by flycatching. Burrowing owls eat primarily small mammals and insects. Land use management of native habitat, particularly grazing intensity, may affect the abundance of prey. In addition, grasshopper control has greatly reduced the intensity and frequency of grasshopper outbreaks in the past century, a potentially significant source of prey for burrowing owls.



Pesticides can be either lethal to burrowing owls, or sub-lethal leading to reduced fitness of the owls. Indirect pesticide effects include reduced potential prey availability, secondary poisoning through scavenging dead rodents and other prey items, and reduction in productivity due to anticholinesterase insecticides. Granular carbofuran is restricted in the U.S. and Canada and its liquid formulations are banned in Canada but still used in the U.S. in corn and alfalfa fields. Although DDT was banned in the U.S. in 1972, burrowing owl eggshell thinning associated with DDT metabolites in eggs and feathers is occasionally problematic in California. An evaluation of pesticide use on the wintering grounds has not been conducted.

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G4, N4B, N4N; Nebraska – S3; South Dakota – S3S4B; Forest Service - Sensitive Species

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** Nebraska and South Dakota are included in the Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States (Klute et al. 2003). Several other conservation and assessment efforts have been published (Holroyd, G.L. et al. 2001, Johnson and Anderson, 2002). Canada, Mexico, and the United States have drafted a North American Conservation Action Plan for the burrowing owl to be published in 2005 (Commission for Environmental Cooperation 2005).

**Existing Conditions.** Maps 39-42 display the recorded locations of burrowing owls on the NNF. Throughout the years burrowing owls have been seen on almost all of the established prairie dog colonies at one time or another. Buffalo Gap National Grassland, Conata Basin in particular, contains one of the largest concentrations or complexes of prairie dog colonies in South Dakota, indeed anywhere in the range of the prairie dog. Fort Pierre National Grassland and Oglala National Grassland contain relatively small areas of prairie dog colonies when compared to Buffalo Gap National Grassland and tribal lands. Buffalo Gap National Grassland and tribal lands in South Dakota contain the largest prairie dog complexes of significance to the burrowing owl throughout the burrowing owl's breeding range. To the north and west of South Dakota burrowing owl occurrence on prairie dog colonies declines dramatically for unknown reasons. Therefore, the large prairie dog colony complexes in South Dakota are unique for burrowing owls. No such areas exist on private lands or public lands in the Great Plains that could sustain large populations of burrowing owls.

Large complexes of prairie dogs have existed in South Dakota for several decades. Many colonies are of some antiquity (White 1986). They are colonies of "historic" importance to burrowing owls – likely used every year by burrowing owls. Burrowing owls often reuse the same territories (and even burrows) as the previous year. This is an indication of site fidelity and the importance of specific site characteristics or a combination of both.

**Direct, Indirect and Cumulative Effects.** The burrowing owl feeds primarily on insects, including macro-arthropods, and small mammals but also take some birds, fishes, and frogs. Although the burrowing owl does not normally feed on prairie dogs, it has been noted to die

from secondary poisoning following prairie dog rodenticide programs (Tyler 1968). Burrowing owls do not eat rodenticide bait (oats) although they could eat deer mice and northern grasshopper mice (*Onychomys leucogaster*) that have been poisoned by rodenticide. Deer mice and northern grasshopper mice populations are higher on prairie dog colonies than on uncolonized areas (Agnew et al. 1986). Changes in deer mice densities and populations of deer mice have been reported following rodenticide application (Wood 1965, Uresk et al. 1988, Deisch et al. 1990). Arthropod populations are higher on prairie dog colonies than on adjacent uncolonized prairie (Agnew et al. 1988). Rodenticide use can reduce the arthropod populations upon which burrowing owls depend.

Burrowing owls migrate in late September. The latest dates of migration in South Dakota were listed as 13<sup>th</sup> of October and the 26<sup>th</sup> of October. Consumption of poisoned mice during migration on attractive habitat such as the large colony complexes on Buffalo Gap National Grassland may take an unknown number of burrowing owls. Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Substantial rodenticide use has already occurred in South Dakota. Rodenticides have already been applied to approximately 6,780 acres of colonies on Buffalo Gap National Grassland in 2004. Nearly 17,000 acres of prairie dog colonies have been treated with rodenticide on nearby private land by the State of South Dakota. The Tribes have purchased enough rodenticide to poison 16,000 acres of prairie dog colonies on the Pine Ridge and Rosebud Indian Reservations. So, extensive use of rodenticides (39,000) has or soon will likely take place on 10 percent of the 412,000 acres of prairie dog colonies estimated to occur in South Dakota. It is likely that there will be additional and substantial requests for more rodenticide use on tribal and private lands. Cumulatively, past and planned prairie dog rodenticide use represents a substantial loss of burrowing owl habitat.

Shooting as a byproduct of recreational prairie dog shooting is a potential source of anthropogenic mortality. Shooting reduced the adult population of prairie dogs by 69% in a Montana colony (Knowles 1987). In one Oklahoma population, shooting accounted for 66 percent of total burrowing owl adult mortality, and in a Canadian study, three burrowing owl populations were greatly reduced by prairie dog shooting. Recreational shooting in prairie dog colonies also has a potentially more widespread though subtle and indirect effect on burrowing owl survival and productivity. Nest success rates and number of young fledged by owls in prairie dog colonies subject to recreational shooting are significantly lower than in colonies where shooting of prairie dogs did not occur. Shooting restrictions and LRMP management decisions on behalf of ferrets appear to have a beneficial effect on burrowing owls. Unrestricted shooting reduces active burrow densities and results in burrowing owl mortality.

Rates of badger predation on burrowing owls are inversely related to measures of prairie dog density. Rates are likely due to the dilution effect, that is, prairie dogs are "preferred" prey by badgers but once prairie dogs are removed (or reduced) from the system, burrowing owls become alternative prey. The burrowing owls are more obvious once the prairie dogs are removed (or reduced) which may also increase vulnerability to predation. Increased rates of badger predation have the greatest impact on the survival of juveniles and adult females (sole incubator of eggs and young).



Burrowing owl populations exhibit significant declines concurrent with reductions in active prairie dog burrow densities. There is, however, a time lag in burrowing owl response to changes in prairie dog densities, possibly because they return to the same sites in subsequent years and when the habitat quality changes as a result of rodenticide application there is increased susceptibility of the nest and incubating female to predation. As a result, over time, the population will decline. This may also be related to the fact that burrowing owls have a higher return rate at sites where they bred successfully the previous year. As reproductive success declines in prairie dog colonies in which rodenticides have been applied there may be a combination of higher mortality and lower site fidelity amongst burrowing owls. The end result may be that the burrowing owl population declines and may eventually be extirpated from the area.

## DETERMINATION OF EFFECT AND RATIONALE FOR THE BURROWING OWL

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G, Fort Pierre N.G., and Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS. Use of prairie dog rodenticide will result in loss of burrowing owl habitat.

During 1999-2000, burrowing owl nest densities on Buffalo Gap National Grassland averaged 0.16 nests per hectare (.064 nests per acre) of prairie dog colony (Griebel 2000). Under Alternative 1, Oglala National Grassland prairie dog colony acreage would change from 2,220 acres (potential habitat for 142 burrowing owl nests) to 3,300 to 6,800 acres (potential habitat for 211 to 435 burrowing owl nests) by 2012. Fort Pierre National Grassland prairie dog colony acreage would change from 1,270 acres (potential habitat for 81 burrowing owl nests) to 1,900 to 2,700 acres (potential habitat for 122 to 173 burrowing owl nests) by 2012. Buffalo Gap National Grassland prairie dog colony acreage would change from 26,030 acres (potential habitat for 1,679 burrowing owl nests) to 48,000 to 92,000 acres (potential habitat for 3,072 to 5,888 burrowing owl nests). Currently, the three national grasslands potentially support about 1,900 burrowing owl nests.

### Alternative 2

**Fort Pierre N.G.** The biological determination for burrowing owl under Alternative 2 is: *“likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of viability range-wide”*.

**Rationale:** This alternative results in the smallest acreage of prairie dog colonies and largest amount of rodenticide use. Fort Pierre National Grassland currently has 1,260 acres of prairie



dog colonies. The expanded use of rodenticide along Forest Service boundaries could eliminate all prairie dog colonies currently on the unit. A few burrowing owls may persist in the abandoned burrows of badgers and coyotes but their principal nesting habitat would disappear. There is the risk of extirpation or creating sinks whereby burrowing owl populations are sustained only via emigration of excess burrowing owls from the closest prairie dog complexes. Such a scenario would not be a stable situation and the population would likely be erratic or lost. Burrowing owl populations on prairie dog colonies in which rodenticides have been applied would have a high risk of going being extirpated from the area.

**Buffalo Gap N.G:** The biological determination for the burrowing owl under Alternative 2 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Rationale: Due to its size, distribution of colonies, and documented nesting efforts and high reproductive success, Buffalo Gap National Grassland is arguably one of the most important areas for nesting burrowing owls.

This alternative results in the least number of prairie dog colony acres with the greatest amount of rodenticide use. With this alternative, it is predicted that there will be between 18,000 and 22,000 acres of prairie dog colonies on Buffalo Gap National Grassland by 2012 instead of the 54,000 to 102,000 colony acres predicted under Alternative 1. The current acreage will drop from 26,030 acres (potential habitat for 1,666 burrowing owl nests) to 16,360 acres (potential habitat for 1,047 burrowing owl nests).

The current closure on prairie dog shooting in the Conata Basin ferret reintroduction habitat is modified under this alternative to allow some limited and regulated prairie dog shooting in a one mile zone on the national grassland along private and tribal boundaries. The shooting closure is retained for the interior portions of the Conata Basin ferret habitat.

Because of the decrease in prairie dog colony acres, burrowing owl habitat would also be reduced. The juxtaposition of the prairie dog colonies may be more important than the reduction in numbers. Under this alternative there will be a large prairie dog colony complex in Conata Basin (15,140 acres), a smaller one in the Smithwick area (530 acres), and the rest of the colonies on the Buffalo Gap National Grassland will be small and isolated. There would be increased vulnerability to predation (reduced survival of adult females and juveniles) and reduced reproduction in rodenticide areas, loss of sites that have a “historic” importance to burrowing owls, a reduction in colony size and reduced cluster dynamics (fewer pairs or nesting in higher densities – both which have been documented to negatively affect reproduction) and effects of complex fragmentation on the distribution of suitable nesting and foraging sites. This alternative authorizes some limited and regulated shooting within the one mile buffer zone in Conata Basin. This does increase the chance of a burrowing owl coming into contact with prairie dog shooters. Shooting within the one mile buffer zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

Prairie dog shooting is a potential source of anthropogenic mortality in certain areas. Shooting can account for 66 percent of total adult mortality, and some burrowing owl populations have been lost due to shooting. Recreational shooting in prairie dog colonies also has a potentially more widespread though subtle and indirect effect on burrowing owl survival and productivity. Nest success rates and number of young fledged by owls in prairie dog colonies subject to

recreational shooting are significantly lower than in colonies where shooting of prairie dogs did not occur.

**Oglala N.G.** The biological determination for burrowing owl under Alternative 2 is: *“likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of viability range-wide”*.

Oglala National Grassland currently has 2,220 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries will reduce prairie dog colonies to 80 acres (potential habitat for 5 burrowing owl nests) with little change in colony acreage by 2012.

Long-term viability of prairie dogs on the unit is questionable under this alternative, particularly when considering the additional impact of recreational shooting. This will likely preclude the establishment of a prairie dog colony complex as prescribed in the LRMP. There is the risk of loosing the burrowing owl population or creating sinks whereby burrowing owl populations are sustained only via emigration of excess burrowing owls from the closest prairie dog complexes. Such a scenario would not be a stable situation and the population would likely be substantially lowered or lost.

### Alternative 3

**Fort Pierre N.G.** The biological determination for burrowing owl under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Rationale: This alternative results in intermediate prairie dog colony acreages and levels of rodenticide use. Fort Pierre National Grassland currently has 1,340 acres of prairie dogs on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate approximately 470 acres of prairie dog habitat within the 0.25-mile zone with 870 acres remaining. The predicted range of prairie dog acres across the grassland is estimated to be between 1,100 and 1,400 acres by 2012.

Under Alternative 3, Fort Pierre National Grassland prairie dog colony acreage would change from the current 1,270 acres (potential habitat for 87 burrowing owl nests) to 1,100 and 1,400 acres (potential habitat for 70 to 90 burrowing owl nests) by 2012, although in the immediate future colony acreage would fall to 870 acres. Burrowing owl habitat would remain stable or increase over current levels retaining the current population of burrowing owls.

**Buffalo Gap N.G:** The biological determination for the burrowing owl under Alternative 3 is: *“may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”*.

Rationale: Buffalo Gap National Grassland harbors about 26,030 acres of prairie dog colonies. Under alternative 3, the expanded use of rodenticide along Forest Service boundaries will reduce the total acreage to about 22,360. In addition, some limited and regulated prairie dog shooting will also be allowed within the one-mile zone. The range of prairie dog acreage across the grassland is predicted to be 27,000 and 38,000 acres by 2012.



Some limited and regulated shooting in the Conata Basin ferret habitat can be considered and authorized in the 0.5 mile zone along private and tribal boundaries, if minimum ferret population thresholds continue to be met and incidental take of ferrets is not likely to be exceeded. The shooting closure prescribed in the LRMP for ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, shooting restrictions or closures will not be considered by the Forest Service in the Smithwick until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Under Alternative 3, Buffalo Gap National Grassland prairie dog colony acreage would change from 26,030 acres (potential habitat for 1,666 burrowing owl nests) to 27,000 and 38,000 acres (potential habitat for 1,728 to 2,432 burrowing owl nests). The colony acreage treated with rodenticide on Buffalo Gap National Grassland would turn into sink habitat for burrowing owls, with populations in those areas not being sustainable. Burrowing owl populations on prairie dog colonies that are subject to repeated rodenticide applications would be at a high risk. Due to its size, distribution of colonies, and documented nesting efforts and high reproductive success, Buffalo Gap National Grassland is important for nesting burrowing owls. There would be increased vulnerability to predation (reduced survival of adult females and juveniles) and reduced reproduction in rodenticide areas, loss of sites that have a “historic” importance to burrowing owls, a reduction in colony size and reduced cluster dynamics (fewer pairs or nesting in higher densities – both which have been documented to negatively effect reproduction) and effects of complex fragmentation on the distribution of suitable nesting and foraging sites.

This alternative could authorize shooting within the 0.5 mile buffer zone in Conata Basin and delays the shooting closure in the Smithwick area. This does increase the chance of a burrowing owl coming into contact with prairie dog shooters. Shooting within the 0.5 mile zone in Conata Basin will be used to augment rodenticide use. Shooting does not change the acreages of prairie dog colony in this analysis.

Prairie dog shooting is a source of owl mortality in certain areas. Shooting has accounted for 66 percent of total adult burrowing owl mortality in some prairie dog colonies and some populations have been decimated by shooting. Recreational shooting in prairie dog colonies also has a potentially more widespread though subtle and indirect effect on burrowing owl survival and productivity. Nest success rates and number of young fledged by owls in prairie dog colonies subject to recreational shooting can be significantly lower than in colonies where shooting of prairie dogs did not occur.

**Oglala N.G.** The biological determination for the burrowing owl under Alternative 3 is: “*may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing*”.

**Rationale:** Oglala National Grassland currently harbors 2,220 acres of prairie dog colonies. The expanded use of rodenticide along Forest Service boundaries will reduce colony acres to 1,170. The predicted range of prairie dog colonies is 1,400 to 1,800 acres, potential habitat for 90 to 115 burrowing owl nests by 2012.

Because of the decrease in prairie dogs, burrowing owl habitat would also be reduced, although the remaining colony acres would likely maintain as viable a population of burrowing owls as has existed on Oglala National Grassland in the past.



## MOUNTAIN PLOVER *Charadrius montanus*

**Distribution and Status.** Mountain plovers breed from southeastern Alberta and southwestern Saskatchewan through central Montana, south to south central Wyoming, east central Colorado and northeastern New Mexico, and east to northern Texas and western Kansas (Dechant et. al. 2003f).

In 1999, the mountain plover was proposed for listing as a threatened species under the Endangered Species Act by the U.S. Fish and Wildlife Service. Higher priority listings precluded further action, until several groups submitted a 60-day Notice of Intent to sue the Secretary of the Department of the Interior for failure to comply with legal deadlines established under the Act for completing listing actions. In response, USFWS re-examined the case. On September 9, 2003, the agency published a notice in the Federal Register (60 FR 53083) withdrawing its proposed rule to list the mountain plover as a threatened species. Following further review and examination of new data, USFWS determined that the mountain plover was not warranted for federal listing because threats to the species were “not as significant as earlier believed” (Dinsmore 2003).

The mountain plover is listed as “imperiled” both globally and nationally. Reasons for the determination are fewer than 100 occurrences, limited suitable nesting habitat and wintering habitat being converted into agricultural land, and the rapid decline of the last few decades is continuing (Nature Serve 2003). In South Dakota they are listed as a former rare breeder in the west (SDOU 1991). There are old records of mountain plovers in Fall River County (SDOU 1991) and a pair was observed in 1977 in Bennett County, one mile north of Tuthill (South Dakota Bird Notes 1977). In Nebraska there are records of mountain plovers inhabiting Dawes and Sioux counties before 1920 but there are no recent sightings in this area (Ducey 1988).

**Habitat.** Mountain plovers are a disturbed-prairie or semi desert species, rather than a grassland species. They prefer disturbed habitats for nesting, including areas formerly occupied by bison and prairie dogs and agricultural fields (Dinsmore 2003). Mountain plovers prefer large, flat grassland expanses with sparse, short vegetation, and bare ground. Areas disturbed by prairie dogs, heavy grazing, or fire can provide suitable habitat. Mountain plovers were found to selectively inhabit black-tail prairie dog colonies in north-central Montana (Knowles et al. 1982). The species often nests near cow pies, rocks, or clumps of vegetation. In mixedgrass prairie and other areas where vegetation is too tall, thick, or shrubby, prairie dog colonies provide a mixture of short grass and bare ground that is suitable for mountain plovers. (Dechant et. al. 2003f).

Departure from the breeding grounds varies latitudinally, with southbound plovers exiting north-central Montana by late September, Wyoming and northeastern Colorado by mid-October, and southeastern Colorado by late October (Dinsmore 2003).

The mountain plover is insectivorous, although its specific food habits have been studied very little. They feed on ground-dwelling invertebrates, primarily beetles (Coleoptera), grasshoppers and crickets (Orthoptera), and ants (Hymenoptera) (Dinsmore 2003).

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G2, N2B, N2N; Nebraska – S1B; South

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** A conservation assessment for the mountain plover was prepared for the Forest Service, December 8, 2003 by Stephen J. Dinsmore.

**Existing Conditions.** The suitable habitat for the mountain plover is the long-term low structure grasslands. All of the grassland areas on Oglala National Grassland and Buffalo Gap National Grassland are considered potential mountain plover habitat, depending on the grazing intensity. Prairie dog colonies may be the best long-term habitat.

The only mountain plover documented in the project area in recent years occurred in Conata Basin in the summer of 2004 (Map 43). None of the national grasslands and forests in the project area are considered in their current breeding range (Dinsmore 2003, Dechant et. al. 2003f). Their historic range included western Nebraska and extreme western South Dakota (Dinsmore 2003), which would include parts of Buffalo Gap National Grassland and Oglala National Grassland.

**Direct, Indirect, and Cumulative Effects.** The mountain plover feeds primarily on insects and other invertebrates. They do not eat grain and are therefore not susceptible to primary poisoning by ingesting rodenticide bait. Also, they leave their breeding ground in Wyoming (the closest population) by mid October, so most would have migrated prior to October when rodenticide use would begin.

Mountain plovers could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a mountain plover for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a plover. The fact that the mountain plover is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

Mountain plovers prefer large, flat grassland expanses with sparse, short vegetation, and bare ground. The mountain plover is not dependent on prairie dog colonies for its existence, but the prairie dog colonies would be one of the few places in the project area that would produce the vegetation characteristics required by the mountain plover in the long term. The over riding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines in the LRMP establish desired levels of grassland structure.

## DETERMINATION OF EFFECT AND RATIONALE FOR THE MOUNTAIN PLOVER

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G & Oglala N.G.** The biological determination for mountain plover under Alternative 1 is: “*No Impact*”.

**Rationale:** With this alternative, it is predicted that there could be between 51,300 and 98,800 acres of prairie dog colonies on the Buffalo Gap National Grassland & Oglala National



Grassland by 2012, and it is anticipated that acreage of colonies treated each year on the two grasslands combined would be less than 200 acres.

The mountain plover feeds primarily on insects and other invertebrates. They do not eat grain and are not susceptible to primary poisoning by ingesting rodenticide bait. Also, they leave their breeding ground in Wyoming (the closest population) by mid October, so the bulk of the birds would migrate before rodenticide use would begin in October.

Mountain plovers prefer large, flat grassland expanses with sparse, short vegetation, and bare ground. The mountain plover is not dependent on prairie dog colonies for its existence, but the prairie dog colonies would be one of the few places in the project area that would produce the vegetation characteristics required by the mountain plover in the long term. The increase in prairie dog acreages proposed in alternative 1, in general, would be advantageous to the mountain plover.

The overriding factor in the “no impact” determination is the lack of a resident mountain plover population on Buffalo Gap National Grassland (SDOU 1991).

## **Alternative 2:**

**Buffalo Gap N.G & Oglala N.G.** The biological determination for mountain plovers under Alternative 2 is: “no impact”.

Rationale: With this alternative, it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on the Buffalo Gap National Grassland & Oglala National Grassland by 2012, and it is anticipated that the annual amount of rodenticide use would range from 9,650 to 11,250 acres on the two grasslands combined

The current closure on prairie dog shooting in the Conata Basin ferret reintroduction habitat would be modified under this alternative to allow some limited and regulated prairie dog shooting in a one mile zone on the national grassland along private and tribal boundaries. The shooting closure is retained for the interior portions of the Conata Basin ferret habitat.

The mountain plover feeds primarily on insects and other invertebrates. They do not eat grain and are not susceptible to primary poisoning by ingesting rodenticide bait. Also, they leave their breeding ground in Wyoming (the closest population) by mid October, so the bulk of the birds would have migrated by the time rodenticide use would begin in October.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a mountain plover, but the effects will still be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colony in this analysis.

With this alternative, it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on the Buffalo Gap National Grassland by 2012. These acres would be available for mountain plovers but is far below the levels in Alternative 1. The mountain plover is not dependent on prairie dog colonies for its existence.

The overriding factor in the “no impact” determination is the lack of a resident mountain plover population on Buffalo Gap National Grassland & Oglala National Grassland (SDOU 1991, Sharp et al. 2001).



### Alternative 3:

**Buffalo Gap N.G & Oglala N.G.** The biological determination for mountain plover under Alternative 3 is: “no impact”.

**Rationale:** With this alternative, it is predicted that there could be between 28,400 and 39,800 acres of prairie dog colonies on the Buffalo Gap National Grassland & Oglala National Grassland combined by 2012, and it is anticipated that the annual use of rodenticide would range from 7,210 to 9,210 acres on the two grasslands.

Regulated shooting in the Conata Basin ferret habitat can be considered and authorized in the one-half mile zone along private and tribal boundaries if minimum ferret population thresholds continue to be met and incidental take of ferrets is not likely to exceed the set limits.

The shooting closure prescribed in the LRMP for ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, shooting restrictions or closures will not be considered by the Forest Service until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

The mountain plover feeds predominantly on insects and other invertebrates. They will not eat the poison grain and are not susceptible to being poisoned by the zinc phosphide treated grain. Also, they leave their breeding ground in Wyoming (the closest population) by mid October, so the bulk of the birds would be gone when the rodenticide application takes place.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a mountain plover, but the effects will still be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall mountain plover populations.

With this alternative, it is predicted that there could be between 28,400 and 39,800 acres of prairie dog colonies on the two grasslands combined by 2012. These acres could be used by mountain plovers.

The overriding factor in the “no impact” determination is the lack of a resident mountain plover population on Buffalo Gap National Grassland (SDOU 1991).

### **BREWER’S SPARROW**     *Spizella breweri*

**Distribution and Status.** Brewer's sparrows breed from southern British Columbia east to southeastern Alberta and southwestern Saskatchewan, south through the Columbia River Basin east of the Cascade crest, and throughout the Great Basin east of the Sierra Nevada crest as far south as southern California, southern Nevada, and northern Arizona. The species regularly breeds east to northwestern New Mexico, eastern Colorado, northwestern Nebraska, western South Dakota, and southwestern North Dakota, with sporadic breeding in western Nebraska, extreme southwestern Kansas, western Oklahoma, and northern Texas (Walker 2004). In South Dakota they are listed as an uncommon summer resident in the extreme southeast and northwest

(SDOU 1991, Holmes and Johnson 2005). In Nebraska they have been documented in Sioux county (Ducey 1988, Mollhoff 2001, Sharp et al. 2001, Holmes and Johnson 2005).

**Habitat.** Brewer's sparrows are closely associated with shrublands dominated by big sagebrush (*Artemisia tridentata*). For that reason, they generally are considered a "sagebrush-obligate" or "shrubland-obligate" species (Walker 2004). Suitable habitat includes sagebrush-dominated shrublands with >10% average shrub cover and an average shrub height of 0.5 - 1.5 m (Walker 2004). In general, Brewer's sparrow abundance decreases as average shrub cover decreases below 10-13%, and Brewer's sparrows disappear entirely when average shrub cover decreases below 3-8% (Walker 2004). Brewer's sparrow abundance may decrease if shrub cover exceeds 50% (Walker 2004).

In spring and summer Brewer's sparrows consume many insects (e.g., alfalfa weevils, aphids, beet leafhoppers, caterpillars, beetles) and in the fall and winter they feed on seeds (NatureServe 2004).

#### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G5, N5B, N5N; Nebraska – S4; South Dakota – S2B; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Recovery and Conservation Planning.** A conservation assessment for the brewer's sparrow was prepared for the Forest Service, December 8, 2003 by Jennifer Holmes and Matthew Johnson in 2005.

**Existing Conditions.** Map 44 displays the places where Brewer's sparrows have been documented. The only sagebrush habitat large enough to have a substantial Brewer's sparrow population occurs in the western part of the Buffalo Gap National Grassland. This geographic area is identified in the LRMP as the Fall River West (FRW) Geographic area. Within the FRW the LRMP identifies a 45,760 – acre area as 3.64 Special Plant and Wildlife Habitat: Sage Grouse. This is the sagebrush habitat and where the Brewer's sparrow can be found. The FRRD has initiated a study in this area in which 72 bird point count plots were set up and surveys were completed in June of 2003 and 2004. In 2003, Brewer's sparrows were detected on 51% of the plots, and in 2004, 42% of the counts had Brewer's sparrows. Small amounts of sagebrush habitat occur on Oglala National Grassland. To date, no brewer's sparrows have been found on the Oglala National Grassland but there are records of Brewer's sparrows in the vicinity (Ducey 1988, Mollhoff 2001, Sharp et al. 2001).

**Direct, Indirect, and Cumulative Effects.** The Brewer's sparrow feeds primarily on seeds in the fall and winter. If they are in the area during rodenticide use, they would be susceptible to primary poisoning.

The Brewer's sparrow is a summer resident of the grasslands. They migrate in September. The latest dates of migration in South Dakota were listed as 27<sup>th</sup> of September and the 2<sup>nd</sup> of October (SDOU 1991). Generally they would not be in the area after October 1 when rodenticide use would commence. Also, Brewer's sparrows do not inhabit areas in which the average shrub cover is below 3-8% (Walker 2004). Sagebrush in general is absent from prairie dog colonies.



Even if Brewer's sparrows are present in the area when rodenticide is applied, they do not inhabit prairie dog colonies, so they would not be exposed to rodenticide bait under normal circumstances.

Sagebrush shrubland is the habitat of the Brewer's sparrow. Prairie dogs tend to avoid the sagebrush habitat because they are less able to see predators and are more susceptible to predation. One of the prairie dog colonies in this area is surrounded by sagebrush and has not appreciably expanded in the last 15 years.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE BREWER'S SPARROW**

### **Alternative 1: (No Action) Current LRMP Direction**

**Buffalo Gap N.G & Oglala N.G.** The biological determination for Brewer's sparrow under Alternative 1 is: "*no impact*".

**Rationale:** The Brewer's sparrow feeds primarily on seeds in the fall and winter. If they are in the area during rodenticide use, they would be susceptible to primary poisoning. The Brewer's sparrow is a summer resident of the grasslands. They migrate in September. The latest dates of migration in South Dakota were listed as 27<sup>th</sup> of September and the 2<sup>nd</sup> of October (SDOU 1991). In general, they would not be in the area after October 1 when rodenticide use would begin. Also, Brewer's sparrows do not inhabit areas in which the average shrub cover is below 3-8% (Walker 2004). Sagebrush in general is absent from prairie dog colonies. Even if Brewer's sparrows are present in the area when rodenticide is applied, they do not inhabit prairie dog colonies and would not be exposed to the rodenticide under normal circumstances.

With this alternative, it is predicted that there could be between 900 and 1800 acres of prairie dog colonies on the FFRD WGA by 2012 and 3,300 to 6,800 of the Oglala National Grassland. Even if the prairie dogs did invade the sagebrush area, this would not be enough to affect the Brewer's sparrow population.

### **Alternative 2:**

**Buffalo Gap N.G & Oglala N.G.** The biological determination for Brewer's sparrows under Alternative 2 is: "*no impact*".

**Rationale:** This alternative results in the smallest prairie dog colony acreages but the greatest amount of rodenticide use (Table 2).

The Brewer's sparrow feeds primarily on seeds in the fall and winter. If they are in the area during rodenticide application, they would be susceptible to primary poisoning. The Brewer's sparrow is a summer resident of the grasslands. They migrate in September. The latest dates of migration in South Dakota were listed as 27<sup>th</sup> of September and the 2<sup>nd</sup> of October (SDOU 1991). In general, they would not be in the area after October 1 when the rodenticide application could start. Also, Brewer's sparrows do not inhabit areas in which the average shrub cover is below 3-8% (Walker 2004). Sagebrush in general is absent from prairie dog colonies. Even if Brewer's sparrows are present in the area when the rodenticide is applied, they do not inhabit prairie dog colonies, so they would not be exposed to the rodenticide under normal circumstances.



With this alternative, it is predicted that there could be between 300 and 400 acres of prairie dog colonies on the FFRD WGA by 2012 and > 100 acres on the Oglala National Grassland. Even if the prairie dogs did invade the sagebrush area, this would not be enough to effect the Brewer's sparrow population.

### Alternative 3:

**Buffalo Gap N.G & Oglala N.G.** The biological determination for Brewer's sparrows under Alternative 3 is: "*no impact*".

Rationale: This alternative results in intermediate prairie dog colony acreages and rodenticide use levels (Table 2).

The Brewer's sparrow feeds primarily on seeds in the fall and winter. If they are in the area during rodenticide application, they would be susceptible to primary poisoning. The Brewer's sparrow is a summer resident of the grasslands. They migrate in September. The latest dates of migration in South Dakota were listed as 27<sup>th</sup> of September and the 2<sup>nd</sup> of October (SDOU 1991). In general, they would not be in the area after October 1 when the rodenticide use would begin. Also, Brewer's sparrows do not inhabit areas in which the average shrub cover is below 3-8% (Walker 2004). Sagebrush in general is absent from prairie dog colonies. Even if Brewer's sparrows are present in the area when rodenticide is applied, they do not inhabit prairie dog colonies, so they would not be exposed to the rodenticide under normal circumstances.

With this alternative, it is predicted that there could be between 600 and 800 acres of prairie dog colonies on the FFRD WGA by 2012 and 1,400 to 1,800 acres on the Oglala National Grassland. Even if the prairie dogs did invade the sagebrush area, this would not be enough to effect the Brewer's sparrow population.

### GRASSHOPPER SPARROW *Ammodramus savannarum*

**Distribution and Status.** The grasshopper sparrow has a widespread distribution throughout most of the Americas, but it often breeds locally and is considered rare to uncommon in much of its range (Vickery 1996) (Dechant 2003h).

The grasshopper sparrow is considered globally "secure" by the Natural Heritage Program because of its wide distribution across North America. However, according to the Breeding Bird Survey, grasshopper sparrow populations have declined by over 60 percent during the past 25 years. The U.S. Fish and Wildlife Service list the grasshopper sparrow as a species of special concern. Within the states of Forest Service Region 2, which represent the core of this species breeding range, grasshopper sparrow populations have also exhibited long-term declines. Declines in Colorado and South Dakota have outpaced national trends.

These small ground-dwellers sing in a hissing, insect-like buzz (Sibley 2000). Hawks are infrequent predators, and loggerhead shrikes commonly impale adult and immature grasshopper sparrows (Vickery 1996). Low-level parasitization of grasshopper sparrow nests by brown-headed cowbirds also occurs (Smith 1968).

**Habitat.** During the nesting season, these sparrows generally occupy intermediate height grassland habitat and prefer drier, sparser sites in tall grass prairies and thicker, brushier sites in

short-grass prairies (Vickery 1996). The sparrow prefers moderately open grasslands and prairies with patchy bare ground, avoiding extensive shrub cover (Vickery 1996). They have been known to inhabit bunchgrasses over sod-forming grasses, although research on Fort Pierre National Grassland did not confirm this (Fritchner 1998). On Fort Pierre National Grassland, positive correlations of grasshopper sparrows with mean vegetation height, litter depth, and visual obstruction indicated western wheatgrass (*Agropyron smithii*) and green needlegrass (*Stipa viridula*) habitats supported the highest densities of grasshopper sparrows (Fritchner 1998), and there was a negative correlation with bare ground and short buffalograss (*Buchloe dactyloides*). These birds are more likely to occupy large tracts of habitat than small fragments (Samson 1980). They nest near the ground in a domed structure in over-hanging grasses with a side entrance (Vickery 1996). The birds forage on open ground in summer to satisfy a diet that consists of about 60% invertebrates—preferably grasshoppers—and 40% seeds (Vickery 1996). Grasshopper sparrows have been known to use prairie dog colonies in South Dakota (Sharps and Uresk 1990).

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G5, N5B, N5N; Nebraska – S4; South Dakota – S4B; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** Maps 45-46 display the recorded locations of grasshopper sparrows on the various units in the project area. These prairie sparrows are summer residents across the project area (Peterson 1991; Graupman et al. 1991; Peterson 1993; Mollhoff et al. 1993). Fall migration usually occurs from mid-August through early September, although individuals may be in South Dakota until about October 26 (Tallman et al. 2002).

**Direct, Indirect, and Cumulative Effects.** This species eats grain and if they are in the area during rodenticide use, they would be susceptible to primary poisoning. They usually migrate from the area well before rodenticide is applied in prairie dog colonies. The short grasses of prairie dog colonies are not preferred habitat, and there are not likely to be many, if any, grasshopper sparrows in the immediate vicinity when the rodenticide is applied.

Eliminating prairie dogs would result in the vegetation on the colony changing from shortgrass to a mixed-grass prairie that supports taller vegetation, like western wheatgrass and green needlegrass. Small prairie dog colonies may provide some foraging sites for this bird, but generally, mixed-grass prairie is better habitat for this species than large expanses of short structure grassland. As a result, rodenticide application to prairie dogs would increase habitat for grasshopper sparrows.

Grasshopper sparrows could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a grasshopper sparrow for a prairie dog. The short grasses of prairie dog colonies are not preferred habitat, and there are not likely to be many, if any, grasshopper sparrows in the immediate vicinity when shooting is occurring. It is always possible for an unethical prairie dog shooter to kill a grasshopper sparrow. The fact that the grasshopper sparrow is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and



this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

Cumulative effects detrimental to grasshopper sparrows include urban development and conversion of grasslands to cropland (Slater 2004). Grasshopper sparrows require intermediate amounts of grass cover, so they benefit from frequent disturbances in the lush, more productive eastern grasslands of the region, where grass is taller and recovers more quickly (Slater 2004). In the region's arid, shorter grasslands, frequent disturbances negatively affect sparrow habitat (Slater 2004). Overgrazing in mixed and shortgrass prairies is a serious threat to grasshopper sparrow habitats (Slater 2004). They are area-sensitive birds, preferring larger grassland patches, and fragmentation of grassland poses a threat (Slater 2004).

## DETERMINATION OF EFFECT AND RATIONALE FOR THE GRASSHOPPER SPARROW

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for grasshopper sparrow under Alternative 1 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 53,000 and 102,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that less than 300 acres of rodenticide application would occur annually (Table 2).

This species eats grain, but usually migrates from the area well before rodenticide use occurs.

Prairie dog colony acreage would increase substantially under this alternative which would reduce the extent of area effective as grasshopper sparrow habitat, especially as nesting cover. There are currently around 30,000 acres of active prairie dog colonies in the affected area and it is predicted that there could be between 53,000 and 102,000 acres of prairie dog colonies on these units by 2012. Using these numbers, there could be a loss of between 23,000 and 72,000 acres of grasshopper sparrow habitat if this alternative were implemented.

Within Alternative 1 prairie dog shooting is allowed outside of the black-footed ferret reintroduction habitat. There is a chance of a prairie dog shooter coming into contact with a grasshopper sparrow, but the effects will be discountable (see the above discussion).

### Alternative 2:

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for grasshopper sparrows under Alternative 2 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to 10,120 and 11,720 acres of prairie dog colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.



The grasshopper sparrow eats grain and if they are in the area during rodenticide application, they would be susceptible to primary poisoning. Most migrate from the area well before rodenticide use begins.

Prairie dog colony acreage would be less than the other alternatives, which would expand the extent of area effective as grasshopper sparrow habitat. With management in place that favors mid-height grasses, they would take the place of sod-bound short grasses, resulting in more nesting habitat for grasshopper sparrows. There are currently around 30,000 acres of active prairie dog colonies in the affected area and it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012. Using these numbers, there could be an increase of between 8,000 and 12,000 acres of grasshopper sparrow habitat if this alternative were implemented.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a grasshopper sparrow, but the effects would be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

### **Alternative 3:**

**Buffalo Gap N.G., Fort Pierre N.G., & Oglala N.G.** The biological determination for grasshopper sparrows under Alternative 3 is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

The grasshopper sparrow eats grain and if they are in the area during rodenticide application, they would be susceptible to primary poisoning. Most migrate from the area well before rodenticide use begins.

Rodenticide use would reduce acres of prairie dog colonies. On these areas, management that favors mid-height grasses would result in less sod-bound short grasses and more nesting habitat for grasshopper sparrows.

Prairie dog colony acreages would increase under this alternative, which would reduce the extent of area effective as grasshopper sparrow habitat, especially as nesting cover. There are currently around 30,000 acres of active prairie dog colonies in the affected area and it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012. Using these numbers, there could be a loss of up to 11,000 acres of grasshopper sparrow habitat if this alternative were implemented.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a grasshopper sparrow, but the effects will still be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to

augment rodenticide use. Shooting will not change the acreages of prairie dog colony in this analysis. These actions will not have any measurable effect on overall grasshopper sparrow populations

## TRUMPETER SWAN *Cygnus buccinator*

**Distribution and Status.** This is North America's largest swan (Sibley 2000). Once, conservationists feared for its survival, but its status has improved, and the bird is no longer considered endangered (Bellrose1976). This swan was introduced in 1960-1963 to LaCreek National Wildlife Refuge (Tallman et al. 2002), which is southeast of the Conata Basin of the Wall District, Buffalo Gap National Grassland. Most of the local population currently winters at LaCreek or further south into the Nebraska Sand Hills.

**Habitat.** Trumpeter swans live on shallow lakes and open marshes (Tallman et al. 2002). Their diet is composed of a variety marsh and aquatic plants, including tubers, stems, leaves, and seeds (Bellrose1976).

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G4, N4B, N4N; Nebraska – S2; South Dakota – S3B, S3N; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** Swans have nested and raised young on several ponds on Buffalo Gap National Grassland with one pair nesting numerous times in Conata Basin (NNF files)(Map 47). Nesting occurs mid-April through July, although some nesting activity has been known to occur as late as September (Tallman et al. 2002).

**Direct, Indirect, and Cumulative Effects.** Since swans eat seeds, they could be susceptible to primary poisoning. Ducks and geese have been poisoned by eating grain baits in agricultural fields (Tietjen 1976). Although prairie dog rodenticide is not applied till after this species nesting season, swans can still be in the area until pond freeze-up typically in November. The activities of a crew applying rodenticide would not adversely affect swans; in fact, human activity might deter swans from using the area where rodenticide is being applied.

Changes in vegetation structure due to increases or decreases in prairie dog acres probably would not affect trumpeter swans, since they utilize primarily wetland habitats.

Trumpeter swans could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a trumpeter swan for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a swan. The fact that the trumpeter swan is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Concentrated prairie dog shooting near trumpeter swan nests might cause nest abandonment.



## DETERMINATION OF EFFECT AND RATIONALE FOR THE TRUMPETER SWAN

### Alternative 1: (No Action) Current LRMP Direction

**Buffalo Gap N.G:** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is “*may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing*”.

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

### Alternative 2:

**Buffalo Gap N.G:** The biological determination for trumpeter swans under Alternative 2 is: “*may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing*”.

Rationale: With the implementation of this alternative it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to a range of 8,900 to 10,500 acres of prairie dog colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Individual swans might eat rodenticide bait if it is applied around ponds being used by swans. Changes in vegetation structure due to increases or decreases in prairie dog acres probably would not affect trumpeter swans, since wetlands are their primary habitats.

Alternative 2 will increase the chance of a prairie dog shooter coming into contact with a trumpeter swan, but the effects will still be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis.

### Alternative 3:

**Buffalo Gap N.G:** The biological determination for trumpeter swans under Alternative 3 is: “*may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing*”.

Rationale: With the implementation of this alternative, it is predicted that there could be between 27,000 and 38,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to a range of 6,800 to 8,700 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.



Individual swans might eat rodenticide bait if it is spread around ponds that they are using. Changes in vegetation structure due to increases or decreases in prairie dog acres probably would not affect trumpeter swans, since wetlands are their primary habitats.

Alternative 3 will increase the chance of a prairie dog shooter coming into contact with a trumpeter swan, but the effects will be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall trumpeter swans populations.

### REGAL FRITILLARY *Speyeria idalia*

**Distribution and Status.** These colorful butterflies historically occurred in the central and northeast United States (Scott 1986), although they have rapidly declined from the eastern portion of the range in recent years (Royer and Marrone 1992). Regal fritillaries occupy suitable habitat statewide in South Dakota (Royer and Marrone 1992).

**Habitat.** These insects inhabit wet meadows and tall grass prairie, in addition to undisturbed prairies in western South Dakota (Marrone 1992). Males emerge in late June, followed by females (Royer and Marrone 1992) who lay eggs near violets (*Viola spp.*) during late August through early September. Generally in about three weeks, upon hatching, larvae crawl to ground where they soon enter hibernation after sheltering themselves with leaves and duff (Royer and Marrone 1992). In spring, larvae feed on emergent violet leaves (Royer and Marrone 1992). On the Northern Prairie, larvae are thought to feed on Nuttall violet (*Viola nutallii*) (Marrone 1995), which grows in prairie sod (Van Bruggen 1971). For feeding adults, nectar sources are long-headed coneflower (*Ratibida columnifera*), purple coneflower (*Echinacea pallida* or *A. angustifolia*), fleabanes (*Erigeron spp.*), black-eyed susans (*Rudbeckia spp.*), gaillardias (*Gaillardia spp.*), milkweeds (*Asclepias spp.*), thistles (*Cirsium spp.*), bergamots (*Monarda spp.*), and blazing stars (*Liatris spp.*) (Moffat and McPhillips 1993). Native prairie with abundant wild flowers provides habitat for the butterflies while re-seeded rangelands without flowers may not (Marrone 1992). The species is always associated with open prairie or ungrazed, reverted pastures, generally in moist tallgrass virgin prairie (Royer and Marrone 1992). Conversion of prairie to cropland, herbicide or pesticide application, overgrazing, and invasion of introduced plants threaten most remaining habitats (Royer and Marrone 1992).

### ESA Status and Other Organizational Rankings

ESA Status	Conservation Status <sup>1</sup>
ESA (no status)	G3, N3; Nebraska – S3; South Dakota – S3; Forest Service - Sensitive

<sup>1</sup> Definitions - <http://www.natureserve.org/explorer/nsranks.htm>

**Existing Conditions.** In some years, individuals will be abundant and will scatter widely; while in other years, they are scarce (Marrone 1992).

Many regal fritillaries were spotted on Fort Pierre National Grassland during the 1990's; one observation has been recorded in western Buffalo Gap National Grassland (NNF files) (Maps 48-49).

**Direct, Indirect, and Cumulative Effects.** Application of zinc phosphide-treated oats should have no direct effect. Adults are not likely to be present and larvae should be hibernating when prairie dog rodenticide is applied. Even if the butterflies were present, they would not likely ingest the rodenticide or active ingredients.

Indirectly, the increase in the height and density of vegetation after rodenticides are applied. Later, prairie dogs will not be present to remove nectar-producing forbs and that may have an additional positive influence.

Shooting and related activities should not have a direct or indirect effect on this species, unless enough prairie dogs are shot so that there is a significant increase in vegetation height and density. In that instance, the butterflies may find the habitat more favorable.

Reductions in prairie dog populations may favor some individual butterflies if habitat and weather conditions are just right. However, positive effects probably will not be numerous or widespread. The best likelihood of positive effects helping this butterfly is on Fort Pierre National Grassland, where regal fritillaries are more abundant.

## **DETERMINATION OF EFFECT AND RATIONALE FOR THE REGAL FRITILLARY**

### **Alternative 1: (No Action) Current LRMP Direction**

**Fort Pierre N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is "*may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing*".

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.

**Buffalo Gap N.G, & Oglala N.G.** This alternative was evaluated in the Northern Great Plains Biological Assessment and Evaluation for the LRMP and the determination made in that document is brought forward for this species under Alternative 1. This determination is a "*no impact*". The species presence on these areas has not been confirmed and documented. If the species presence had been confirmed, the determination would have been "*may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide.*"

Alternative 1 in this DEIS also includes a project-level implementation plan (Appendix B) for the programmatic direction presented in the LRMP. The determination presented above assumes all rodenticide use and the other prairie dog management tools are applied in a manner that meets the project-level criteria presented in Appendix B of the DEIS.



### Alternative 2:

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for regal fritillaries under Alternative 2 is: *"No impact"*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 18,000 and 22,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 10,120 and 11,720 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the one mile boundary management zone.

Application of rodenticide bait should have no direct effect. When the rodenticide is applied, adults are not likely to be present and larvae should be hibernating. Even if the butterflies were present, they would not likely ingest the rodenticide or active ingredients. Rodenticide treatments to prairie dog colonies could increase vegetation height and density and could result in a greater diversity of nectar-producing forbs. This is most likely to occur on moist, more productive range sites.

### Alternative 3:

**Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G.** The biological determination for regal fritillaries under Alternative 3 is: *"No impact"*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to a range of 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Application of prairie dog rodenticide should have no direct effect. When the rodenticide is applied, adults are not likely to be present and larvae should be hibernating. Even if the butterflies were present, they would not likely ingest the poison. Rodenticide treatments to prairie dog colonies could increase vegetation height and density and could result in a greater diversity of nectar-producing forbs. This is most likely to occur on moist, more productive range sites.

## SUMMARY OF DETERMINATIONS OF EFFECTS FOR SENSITIVE SPECIES

Table 10 illustrates the determinations of each Forest Service sensitive species analyzed by alternative. Determinations include the following:



**Table 10. Sensitive Species Determinations under the Alternatives**

Common Name	Alternative 1			Alternative 2			Alternative 3		
	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.
<b>MAMMALS</b>									
Black-tailed prairie dog	MAII	MAII	MAII	MAII	LRLV	LRLV	MAII	MAII	MAII
Swift fox	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
<b>BIRDS</b>									
Greater prairie chicken	---	MAII	---	---	MAII	---	---	MAII	---
Long-billed curlew	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
Greater sage grouse	NI	---	---	NI	---	---	NI	---	---
Northern harrier	NI	NI	NI	NI	NI	NI	NI	NI	NI
Ferruginous hawk	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
Chestnut-collared longspur	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
McCown's longspur	---	---	MAII	---	---	MAII	---	---	MAII
Short-eared owl	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
Western burrowing owl	MAII	MAII	MAII	MAII	LRLV	LRLV	MAII	MAII	MAII
Mountain plover	NI	---	---	NI	---	---	NI	---	---
Brewer's sparrow	NI	---	NI	NI	---	NI	NI	---	NI
Grasshopper sparrow	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII
Trumpeter swan	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII	MAII

Common Name	Alternative 1			Alternative 2			Alternative 3		
	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.
INSECTS									
Regal fritillary	MAII	MAII	NI	NI	NI	NI	NI	NI	NI

**NI** - No impact -- where no effect is expected

**BI** - Beneficial impact -- where effects are expected to be beneficial, and no negative effects are expected to occur

**MAII** - May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing -- where effects in the project area are not expected to be significant and the species and its habitat will remain well distributed.

**LRLV** - Likely to result in a loss of viability in the Planning Area, or in a trend toward federal listing -- where effects are expected to be detrimental and substantial, and the species and its habitat will not be maintained in sufficient numbers or distribution through time.

## VII. LITERATURE CITED

- Abele, S.C., V.A. Saab, and E.O. Garton. 2004. Lewis's woodpecker (*Melanerpes lewis*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/lewisswoodpecker.pdf> [Accessed Nov 2004].
- Agnew, W., D.W. Uresk, and R.M. Hansen. 1983. Flora and fauna associated with prairie dog ecosystems. M.S. Thesis. Colorado State Univ., Fort Collins. 47pp.
- Agnew, W., D.W. Uresk, and R.M. Hansen. 1986. Flora and fauna associated with prairie dog colonies and adjacent ungrazed mixed-grass prairie in western South Dakota. J. of Range Manage. 39:135-139.
- Agnew, W., D.W. Uresk, and R.M. Hansen. 1988. Arthropod consumption by small mammals on prairie dog colonies and adjacent ungrazed mixed grass prairie in western South Dakota. Pages 81-87 In D. W. Uresk, G.L. Schenbeck, and R. Cefkin (technical editors) Eighth Great Plains wildlife damage control workshop proceedings. General technical Report RM-154, Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, Fort Collins, CO.
- Allardyce D. and M.A. Sovada. 2003. A review of the ecology, distribution, and status of swift foxes in the United States. Pages 3-18 in M. A. Sovada and L. Carbyn editors The Swift fox: Ecology and conservation of swift fox in a changing world. Canadian Plains Research Center. University of Regina. Regina, Saskatchewan Canada.
- Apa A. D., D. W. Uresk, and R. L. Linder. 1991. Impacts of black-tailed prairie dog rodenticides on nontarget passerines. Great Basin Naturalist 51(4):301-309.
- Ashton, D.E., and E.M. Dowd. 1991 Fragile legacy; endangered, threatened and rare animals of South Dakota. South Dakota Dept. of Game, Fish and Parks. Rep. 91-04. 150pp.
- Bechard, M. J., and J. K. Schmutz. 1995. Ferruginous hawk (*Buteo regalis*). in Poole, A., And F. Gill, eds. The birds of North America. Academy of Natural Sciences and American Ornithological Union, Washington D.C.
- Bellrose, F. C. 1976. Ducks, geese, and swans of North America. Stackpole Books. Harrisburg, PA. 544pp.
- Biggins, D.E., B.J. Miller, L.R. Hanebury, B. Oakleaf, A.H. Farmer, R. Crete, and A. Dood. 1993. A technique for evaluating black-footed ferret habitat. Pages 73-38 in J.L. Oldemeyer, D.E. Biggins, and B.J. Miller, editors. Proceedings of the Symposium on the Management of Prairie Dog Complexes for the Reintroduction of the Black-footed Ferret. U.S. Fish and Wildlife Service Biological Rep. No. 13.



- Central Nebraska Public Power and Irrigation District. 2004. Bald eagles in Nebraska [Online]. Available: <http://www.cnppid.com/Ragle-viewing.htm> [Accessed Dec 2, 2004].
- Clark, R. J. 1975. A field study of the short-eared owl, *Asio flammeus* (Pontoppidan), in North America. Wildl. Monogr. 47. 67pp.
- Clippinger, N.W. 1989. Habitat suitability index model: black-tailed prairie dog. U.S. Fish and Wildlife Service, Biol. Rep. 82(10). 21pp.
- Commission for Environmental Cooperation. 2005. Draft North American conservation action plan for the western burrowing owl (*Athene cunicularia hypugaea*). Prepared by Burrowing Owl Technical Advisory Committee (Working Group) Geoff Holroyd (chair and editor) for Commission for Environmental Cooperation.
- Conservation Breeding Specialist Group. 2004. Black-footed ferret population management planning workshop. Final Report. IUCN/SSC Conservation Breeding Specialist Group: Apple Valley, MN.
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, A. L. Zimmerman, and B. R. Euliss. 2003a. Effects of management practices on grassland birds: American bittern. Northern Prairie Wildlife Research Center, Jamestown, ND. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/ambi/ambi.htm> (Version 12DEC2003).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2003b. Effects of management practices on grassland birds: long-billed curlew. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/noha/noha.htm> (Version 12DEC2003).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2003c. Effects of management practices on grassland birds: chestnut collared longspur. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/noha/noha.htm> (Version 12DEC2003).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, P. A. Rabie, and B. R. Euliss. 2003d. Effects of management practices on grassland birds: McCown's longspur. Northern Prairie Wildlife Research Center, Jamestown, ND. Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/mclo/mclo.htm> (Version 12AUG2004).

- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2003e. Effects of management practices on grassland birds: short-eared owl. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/noha/noha.htm> (Version 12DEC2003).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2003f. Effects of management practices on grassland birds: mountain plover. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/noha/noha.htm> (Version 12DEC2003).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2003g. Effects of management practices on grassland birds: northern harrier. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/noha/noha.htm> (Version 12DEC2003).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2003h. Effects of management practices on grassland birds: grasshopper sparrow. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/noha/noha.htm> (Version 12DEC2003).
- DeGraaf, R. M., V. E. Scott, R. H. Hamre, L. Ernst, and S. H. Anderson. 1991. Forest and rangeland birds of the United States - Natural History and Habitat Use. In: USDA Forest Service, Agriculture Handbook 688pp.
- Deisch, M.S., D.W. Uresk, and R.L. Linder. 1990. Effects of prairie dog rodenticides on deer mice in western South Dakota. Great Basin Naturalist 50:347-353.
- Dinsmore, S.J. 2003. Mountain plover (*Charadrius montanus*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/mountainplover.pdf> [Accessed Dec 2004].
- Duebbert, H. F. and J. T. Lokemoen. 1977. Upland nesting of American bitterns, marsh hawks, and short-eared owls. Prairie Naturalist 9:33-40.
- Ducey, J.E. 1988. Nebraska birds breeding status and distribution. Simmons and Boardman Books. Omaha, NE. 148pp.

- Eng, R. L., J. E. Toepfer, and J. A. Newell. Management of livestock to improve and maintain prairie chicken habitat on the Sheyenne National Grasslands in Bjugstad, A. J., tech. coord. 1988. Prairie chickens on the Sheyenne National Grassland. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-159. 73 pp.
- Fredrickson, L. 1996. The greater prairie chicken. South Dakota Cons. Digest 63(5):11-12.
- Fritcher, S. C. 1998. Bird and small mammal populations in relation to seral stage of mixed-grass prairie, Fort Pierre National Grassland, South Dakota. M.S. Thesis, South Dakota State Univ., Brookings. 128pp.
- Graupman, K., R. A. Peterson, and N. R. Whitney, compilers. 1991. Birds of the Buffalo Gap National Grassland, field checklist. USDA Forest Service. Chadron NE.
- Griebel, R. L. 2000. Ecological and physiological factors affecting nesting success of burrowing owls in Buffalo Gap National Grassland. M.S. Thesis, University of Nebraska, Lincoln
- Harrison R. L. and J. Whitaker-Hoagland. 2003. A literature review of swift fox habitat and den selection. Pages 79-89 in M. A. Sovada and L. Carbyn editors. The Swift fox: Ecology and conservation of swift fox in a changing world. Canadian Plains Research Center. University of Regina. Regina, Saskatchewan Canada.
- Hetlet, L. A. 1991-2004. Swift fox surveys. Final Reports to USDA Forest Service, Fall River Ranger District. Hot Springs SD.
- Hetlet, L. A. 1994-2004. Bald eagle surveys. Final Reports to USDA Forest Service, Fall River Ranger District. Hot Springs SD.
- Higgins, K.F., E. Dowd Stukel, J.M. Goulet, and D.C. Backlund. 2000. Wild mammals of South Dakota. South Dakota Dept. of Game, Fish and Parks. 278pp.
- Hodorff, R. A. 2004. Swift fox report and implementation strategy - Fall River Ranger District Buffalo Gap National Grassland. Final Report to U. S. Forest Service, Fall River Ranger District. Hot Springs SD.
- Holmes, J.A. and M.J. Johnson 2005. Brewer's sparrow (*Spizella breweri*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/brewerssparrow.pdf> [Accessed Jan 2005].
- Holroyd, G. L., R. Rodriguez-Estrella, S. R. Sheffield. 2001. Conservation of the burrowing owl in western North America: issues, challenges, and recommendations. J. Raptor Res. 35(4):399-407.



- Holt, D. W., and S. M. Leasure. 1993. Short-eared owl (*Asio flammeus*). in Poole, A., and F. Gill, eds. The birds of North America. Acad. of Nat. Sci., Phil., PA, and American Ornithological Union, Washington D.C.
- Hoogland, J.L., 1995. The black-tailed prairie dog, social life of a burrowing mammal. The University of Chicago Press, Chicago 60637, The University of Chicago Press, Ltd., London. 557pp.
- Jasifoff, T.M. 1982. Habitat suitability index models: ferruginous hawk. U.S. Fish and Wildlife Service. FWS/OBS-82/10.10 18pp.
- Johnsgard, P.A. 1979. Birds of the Great Plains, breeding species and their distribution. University of Nebraska Press. Lincoln 539pp.
- Johnsgard, P. A. 1983. Grouse of the world. Univ. Nebr. Press., Lincoln. 413pp.
- Johnsgard, P. A. 1990. Hawks, owls, and falcons of North America. Smithsonian Inst. Press. Washington, D. C. 403pp.
- Johnson, A.S., Anderson, S.H. 2002. Conservation assessment for the western burrowing owl in the Black Hills National Forest, South Dakota and Wyoming. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming. [Online]. Available: [http://www.fs.fed.us/r2/blackhills/projects/planning/assessments/burrowing\\_owl.pdf](http://www.fs.fed.us/r2/blackhills/projects/planning/assessments/burrowing_owl.pdf) [Accessed Jan 2005]
- Jones, J.K., D.M. Armstrong, R.S. Hoffmann and C. Jones. 1983. Mammals of the Northern Great Plains. University of Nebraska Press, Lincoln. 379pp.
- Joslin, G. and H. Youmans, coordinators. 1999. Effects of recreation on Rocky Mountain wildlife: a review for Montana. Committee of Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307pp.
- Kahn, R., L. Fox, P. Horner, B. Giddings, and C. Roy. 1997. Conservation assessment and conservation strategy for swift fox in the United States. Division of Wildlife. Denver CO. 54 pp.
- Kantrud, H. A. and K. F. Higgins. 1992. Nest and nest site characteristics of some ground-nesting, non-passerine birds of northern grasslands. *Prairie Nat.* 24:67-84.
- Keinath, D.A. 2004. Fringed Myotis (*Myotis thysanodes*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/fringedmyotis.pdf> [Accessed Nov 2004].
- Kennedy, P.L. 2003. Northern Goshawk (*Accipiter gentiles atricapillus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region.

Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northerngoshawk.pdf>  
[Accessed Nov 2004].

- Klute, D. S., L. W. Ayers, M. T. Green, W. H. Howe, S. L. Jones, J. A. Shaffer, S. R. Sheffield, and T. S. Zimmerman. 2003. Status assessment and conservation plan for the western burrowing owl in the United States. U.S. Fish and Wildlife Service, Denver.
- Knowles, C.J. 1982. Habitat affinity, populations and control of black-tailed prairie dogs on the Charles M. Russell National Wildlife Refuge. Ph.D. Dissertation. Univ. of Montana, Missoula. 171pp.
- Knowles, C.J. 1986. Population recovery of black-tailed prairie dogs following control with zinc phosphide. *J. of Range Manage.* 39(3):249-250.
- Knowles, C. J. 1987. An evaluation of shooting and habitat alteration for control of black-tailed prairie dogs. Pages 53-56 In D. W. Uresk, G.L. Schenbeck, and R. Cefkin (technical editors) Eighth Great Plains wildlife damage control workshop proceedings. General technical Report RM-154, Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, Fort Collins, CO.
- Knowles, C.J., C.J. Stoner S. P. Gieb. 1982. Selective use of black-tailed prairie dog towns by mountain plovers. *Condor* 84:71-74.
- Lewis, J.C. 1995. Whooping crane (*Grus americana*) in The birds of North America, No. 153 (A. Poole and F. Gill, eds.). The Acad. of Nat. Sci., Philadelphia, and The American Ornithological Union, Washington D.C.
- Livieri, T.M. and W. Perry. 2005. Effects analysis of black-tailed prairie dog reduction on black-footed ferret populations in Conata Basin. Unpublished report, Wall, South Dakota.
- Luce, R. J. 2001. An umbrella, multi-state approach for the conservation and management of the black-tailed prairie dog, *Cynomys Ludovicianus*, in the United States – an addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy, November 3, 1999.
- Luce, R. J. 2003. A multi-state conservation plan for the black-tailed prairie dog, *Cynomys Ludovicianus*, in the United States – an addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy, November 3, 1999.
- MacWhirter, R. B., and K. L. Bildstein. 1996. Northern harrier (*Circus cyaneus*) in Poole, A., and F. Gill, eds. The birds of North America. Acad. of Nat. Sci., Phil., PA, and American Ornithological Union, Washington D.C.
- Marrone, G. 1992. Regal Fritillary (*Speyeria idalia*). Prairie Pothole Joint Venture of the North American Waterfowl Management Plan.

- McDonald, D., N.M. Korfanta, and S. J. Lantz. 2004. The burrowing owl (*Athene cunicularia*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/burrowingowl.pdf> [Accessed Jan 2005]
- Moffat, M. and N. McPhillips, compilers. 1993. Management for butterflies in the Northern Great Plains: A literature review and guidebook for land managers. U.S. Fish and Wildlife Service, Ecol. Ser., South Dakota State Office. Pierre. 14pp.
- Mollhoff, W., J. 2001. The Nebraska breeding bird atlas. Nebraska Ornithologist's Union occasional paper No. 7. Nebraska technical series No 20. Nebraska Game and Parks Commission, Lincoln NE. 233pp.
- Mollhoff, W., J. E. Ducey, and R. A. Peterson, compilers. 1993. Birds of the Nebraska Sandhills. Samuel R. McKelvie National Forest and Nebraska National Forest (Bessey Ranger District). Field Checklist. USDA Forest Service.
- NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8. NatureServe, Arlington, VA <http://www.natureserve.org/explorer>.
- Naugle, D.E. 2004. Black Tern (*Chlidonias niger surinamensis*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/blacktern.pdf> [Accessed Nov 2004].
- Northern Prairie Wildlife Research Center. 2004. Biological Resources [Online]. Available: <http://www.npwrc.usgs.gov/resource/resource.htm> [Dec , 2004].
- Olendorff, R. R. 1993. Status, biology, and management of ferruginous hawks: a review. Raptor Res. And Tech. Asst. Cen., Spec. Rep. USDI Bureau of Land Management L.M., Boise, ID.
- Peterson, R. A., R. Riis, and R. V. Summerside, compilers. 1991. Birds of central South Dakota, including the Fort Pierre National Grassland. Field Checklist. USDA Forest Service.
- Peterson, R. A., compiler. 1993. Birds of the Nebraska Pine Ridge. Nebraska National Forest (Pine Ridge Ranger District) and Oglala National Grassland. Field Checklist. USDA Forest Service.
- Peterson, R. A. 1995. The South Dakota breeding bird atlas. S. D. Ornithologists' Union, Northern State Univ., Aberdeen. 276pp.
- Prose, B. L. 1985. Habitat suitability index models: Greater prairie-chicken (multiple levels of resolution). U.S. Fish and Wildlife Service. Biol. Rep. 82(10.102). 33pp.
- Rahel, F.J. and L.A. Thel. 2004. Sturgeon Chub (*Macrhybopsis gelida*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/sturgeonchub.pdf> [Accessed Nov 2004].



- Rice, L. A., and A. V. Carter. 1982. Evaluation of South Dakota grassland management practices as they affect prairie chicken populations. 1974-1978. P-R Proj. W-75-R-24. South Dakota Game, Fish and Parks Dept., Pierre. 25pp.
- Rich, T.D. et al. 2004. Partners in flight North American landbird conservation plan. Cornell Lab of Ornithology. Ithaca, NY. 84pp.
- Rowland, M. M. 2004. Effects of management practices on grassland birds: greater sage-grouse. Northern Prairie Wildlife Research Center, Jamestown, ND. Northern Prairie Wildlife Research Center Online.  
<http://www.npwrc.usgs.gov/resource/literatr/grasbird/grsg/grsg.htm>  
 (Version 12AUG2004).
- Royer, R. A., and G. M. Marrone. 1992. Conservation status of the regal fritillary (*Speyeria idalia*) in North and South Dakota. U.S. Fish and Wildlife Service, Denver, CO. p. 22-31.
- Samson, F. B. 1980. Island biogeography and the conservation of prairie birds. Proc. North Am. Prairie Conf. 7:293-305.
- Schenbeck, G.L., and G. Mason. 1994. Summary of the 1990 and 1992 prairie dog hunter surveys on the Buffalo Gap National Grassland in the Conata Basin, South Dakota. Unpublished report. Nebraska National Forest, Chadron, NE.
- Schenbeck, G.L., and G. Mason, and C Loop. 1994. Aerial photograph inventory of black-tailed prairie dog colonies in the Conata Basin/Badlands area of South Dakota, Summer, 1993. Unpublished report. Nebraska National Forest, Chadron, NE.
- Schitoskey F. 1975. Primary and secondary hazards of three rodenticides to kit fox. J. Wildl. Manage. 39(2):416-418.
- Schmutz, J. K., and D. J. Hungle. 1989. Population of ferruginous and Swainson's hawks increase in synchrony with ground squirrels. Can J. Zool. 67:2596-2601.
- Scott, J. A. 1986. The butterflies of North America. Stanford Univ. Press. Stanford, CA. 327 pp.
- Sedgwick, J.A. 2004a. Chestnut-collared Longspur (*Calcarius ornatus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/chestnutcollaredlongspur.pdf> [Accessed Dec 2004].
- Sedgwick, J.A. 2004b. McCown's Longspur (*Calcarius mccownii*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/mccownslongspur.pdf> [Accessed Dec 2004].

- Sharp R. S., W. R. Silcock, and J. G. Jorgensen. 2001. Birds of Nebraska their distribution and temporal occurrence. University of Nebraska Press. Lincoln and London. 520pp.
- Sharps, J. C., and D. W. Uresk. 1990. Ecological review of black-tailed prairie dogs and Associated species in western South Dakota. Great Basin Nat. 50:339-345.
- Sibley, D. A. 2000. The Sibley guide to birds. National Audubon Society. Alfred A. Knopf, New York, N.Y. 545pp.
- Slater, G.L. 2004. Grasshopper Sparrow (*Ammodramus Savannarum*): A technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/grasshoppersparrow.pdf> Accessed [Jan 2005]
- Smith, R. L. 1968. Grasshopper sparrow. Pp. 725-745 in Life histories of North American cardinals, grosbeaks, buntings, towhees, finches, sparrows, and allies (O. L. Austin, Jr., ed.) Pt.2 U.S. Natl. Mus. Bull 237.
- South Dakota Bird Notes 1977. Sighting of Mountain Plover. South Dakota Bird Notes 30(2):30
- South Dakota Department of Agriculture, South Dakota Department of Game, Fish and Parks, United States Department of Agriculture – ADC, United States Fish and Wildlife Service; Cooperative Extension Service; and United States Department of Agriculture – SCS. 1994. Prairie Dog Management in South Dakota (1.1mb) South Dakota Department of Agriculture 1994. Brochure entitled Prairie Dog Management In South Dakota.
- South Dakota Department of Game, Fish and Parks. 2001. Executive Summary, Prairie Dog Shooting in South Dakota. HD-8-02.AMS.
- South Dakota Department of Game, Fish and Parks. 2004. Bald eagle [Online]. Available: <http://sdgfp.info/Wildlife/WildlifePlans/BEindex/> [Dec 2, 2004].
- South Dakota Department of Game, Fish and Parks. 2004. South Dakota black-tailed prairie dog conservation and management plan, Final Draft.
- South Dakota Department of Game, Fish and Parks. 2005. News Release. January 24, 2005.
- South Dakota Ornithologist's Union (SDOU). 1991. The birds of South Dakota, 2nd Ed. Aberdeen, SD. 411pp.
- Stephens, R.M. and Anderson, S.H. 2005. Swift Fox (*Vulpes velox*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/swiftfox.pdf> [Accessed Feb 1, 2005].

- Svedarsky, W.D., J.E. Toepfer, R.L. Westemeier, and R.J. Robel. 2003. Effects of management practices on grassland birds: Greater prairie-chicken. Northern Prairie Wildlife Research Center, Jamestown, ND. 42p.
- Tallman, D. A., D. L. Swanson, and J. S. Palmer. 2002. Birds of South Dakota. South Dakota Ornithological Union, Northern State Univ., Aberdeen. 441pp.
- Tietjen H. P. 1976. Zinc phosphide-Its development as a control agent for black-tailed prairie dogs. Special Scientific Report-Wildlife No. 195. U.S. Fish and Wildlife Service. Washington DC. 14 pp.
- Tigner J. and E. Dowd Stukel. 2003. Bats of the Black Hills: a description of status and conservation needs. South Dakota Game Fish and Parks, Wildlife Division Report 2003-05, Pierre, SD. 94 pp.
- Timm, R. M. 1983. Description of active ingredients. pp.G31-G131. In R.M. Timm ed. Prevention and Control of Wildlife Damage. Great Plains Agricultural Council Wildlife Resource Committee and Cooperative Extension Service University of Nebraska. Lincoln
- Tyler, J. D. 1968. Distribution and vertebrate associates of the black-tailed prairie dog in Oklahoma. Ph.D. Dissertation, University of Oklahoma, Norman.
- U.S. Fish and Wildlife Service. 1983. Northern state bald eagle recovery plan. U. S. Fish And Wildlife Service, Denver, CO. 76 pp.
- U.S. Fish and Wildlife Service. 1995. Endangered and threatened wildlife and plants; Final rule to reclassify the bald eagle from endangered to threatened in all of the lower 48 states. Federal Register (Vol 60, No. 133, pp 36000-36010).
- U.S. Fish and Wildlife Service. 1999. Endangered and threatened wildlife and plants; proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife; proposed rule. Federal Register (Vol 60, No. 133, pp 36000-36010).
- U.S. Fish and Wildlife Service. 2000a. 2000-2001 Contingency plan. Federal-state cooperative protection of whooping cranes. Aransas/Matagorda Isl. Nat. Wildl. Ref. Complex. Austwell, TX. 36pp.
- U.S. Fish and Wildlife Service. 2000b. Federal Register, Vol. 65, No. 24, February 4, Endangered and Threatened Wildlife and Plants; 12-month finding for a petition to list the black-tailed prairie dog as threatened.
- U.S. Fish and Wildlife Service. 2004a. Federal Register, Vol. 69, No. 159, August 18, Endangered and threatened wildlife plants; finding for the resubmitted petition to list the black-tailed prairie dog as threatened.
- U.S. Fish and Wildlife Service. 2004b. Species assessment and listing priority assignment for the black-tailed prairie dog. Current States/Counties/Territories/Countries of Occurrence.



- USDA Forest Service. 1995a. Biological assessment for black-footed ferret. Rocky Mountain Region, USDA Forest Service, Denver CO.
- USDA Forest Service. 1995b. Biological evaluation for whooping crane. Rocky Mountain Region, USDA Forest Service, Denver CO.
- USDA Forest Service. 1995c. Biological evaluation for American burying beetle. Rocky Mountain Region, USDA Forest Service, Denver CO
- USDA Forest Service. 1995d. Biological assessment for bald eagle, need for evaluating livestock grazing permits for allotments which contain occupied breeding areas for bald eagles. Rocky Mountain Region, USDA Forest Service.
- USDA Forest Service. 1995e. Biological assessment for bald eagle, assessment on the effects of livestock grazing on the bald eagle and its associated wintering habitat within the grasslands. Rocky Mountain Region, USDA Forest Service.
- USDA Forest Service. 1995f. Biological assessment for swift fox. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995g. Biological assessment for American Bittern. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995h. Biological assessment for long-billed curlew. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995i. Biological evaluation for ferruginous hawk. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995j. Biological assessment for burrowing owl. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995k. Biological assessment for mountain plover. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995l. Biological assessment for trumpeter swan. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995m. Biological assessment for black tern. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995n. Biological evaluation for northern leopard frog. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995o. Biological assessment for regal fritillary butterfly. Rocky Mountain Region, Forest Service.

- USDA Forest Service. 1995p. Biological evaluation for sensitive plants and wildlife that for the most part are not impacted by domestic livestock grazing. Rocky Mountain Region, Forest Service.
- USDA Forest Service. 1995q. Biological evaluation for sensitive species in riparian areas grazed by domestic livestock assessment of the effects of livestock grazing on the sensitive species and their habitats within the rocky mountain region. Rocky Mountain Region, Forest Service.
- USDA Forest Service 2000. Northern Great Plains terrestrial assessment: a broad-scale look at species viability on the Northern Great Plains. Unpub. Report, Chadron, NE.
- USDA Forest Service 2001a. Unpub. Report on the viability and recovery of black-footed ferrets, Chadron, NE.
- USDA Forest Service 2001b. Final environmental impact statement for the northern Great Plains management plans revision. USDA Forest Service.
- USDA Forest Service 2001c. Land and resource management plan, Nebraska National Forest and associated units, Rocky Mountain Region.
- USDA Forest Service 2003. R2 sensitive species list. USDA Forest Service, Rocky Mountain Region, Lakewood, Co. [http://fsweb.r2.fs.fed.us/rr/tes/tes\\_r2ss.html](http://fsweb.r2.fs.fed.us/rr/tes/tes_r2ss.html) [Accessed Jan 2005]
- Ure, J., P. Briggs, and S.W. Hoffman. 1991. Petition to list as endangered the ferruginous hawk (*Buteo regalis*), as provided by the Endangered Species Act of 1973, as amended in 1982. Ferruginous Hawk Project, Salt Lake City, UT in Bechard, M. and J. Schmutz. 1995. Ferruginous Hawk (*Buteo regalis*) in The Birds of North America, No. 172 (A. Poole and F. Gill, eds.). The Acad. of Nat. Sci., Philadelphia, and The American Ornithological Union, Washington, D.C.
- Uresk, D.W., and G.L. Schenbeck. 1987. Effect of zinc phosphide rodenticide on prairie dog colony expansion as determined from aerial photography. *Prairie Naturalist* 19(1):57-61.
- Uresk, D.W., and J. C. Sharps. 1986. Denning habitat and diet of swift fox in western South Dakota. *Great Basin Naturalist* 46:249-253.
- Uresk, D.W., R. L. Linder, and A. D. Apa 1985b. Efficiency of two black-tailed prairie dog rodenticides and their impacts on non-target bird species. Final Report, Rocky Mountain Range and Forest Experiment Station. Forest Research Laboratory, South Dakota School of Mines and Technology, Rapid City. 72p.
- Uresk, D.W., R. L. Linder, and M. S. Deisch 1986. Evaluation of three rodenticides on nontarget small mammals and invertebrates. Final Report, Rocky Mountain Range and Forest Experiment Station. Forest Research Laboratory, South Dakota School of Mines and Technology, Rapid City. 132p.

- Uresk, D. W., K. E. Severson and J. Javersak. 2003. Vegetative characteristics of swift fox denning and foraging sits in southwestern South Dakota. USDA Forest Service, Rocky Mountain Research Station, Research Paper RMRS-RP-38. Fort Collins, CO. 4pp.
- Uresk, D.W., R. M. King, A. D. Apa, M. S. Deisch, and R. L. Linder. 1985a. Rodenticidal effects of zinc phosphide and strychnine on nontarget species. Final Report Rocky Mountain Range and Forest Experiment Station. Forest Research Laboratory, South Dakota School of Mines and Technology, Rapid City. 22pp.
- Uresk, D.W., R. M. King, A. D. Apa, M. S. Deisch, and R. L. Linder. 1988b. Rodenticidal effects of zinc phosphide and strychnine on nontarget species. Pages 57-63 In D. W. Uresk, G.L. Schenbeck, and R. Cefkin (technical editors) Eighth Great Plains wildlife damage control workshop proceedings. General technical Report RM-154, Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, Fort Collins, CO.
- Van Bruggen, T. 1992. Wildflowers, grasses, and other plants of the Northern Plains and Black Hills. Badlands Nat. History Assoc., Interior, SD. 112pp.
- Van Pelt, W.E. 1999. The black-tailed prairie dog conservation assessment and strategy-final draft. Nongame and Endangered Wildlife Program. Arizona Game and Fish Department, Phoenix, AZ.
- Vickery, P. D. 1996. Grasshopper sparrow (*Ammodramus savannarum*). in Poole, A., and F. Gill, eds. The birds of North America. Acad. of Nat. Sci., Phil., PA, and American Ornithological Union, Washington, D.C.
- Vosburgh, T.C. and L.R. Irby. 1998. Effects of recreational shooting on prairie dog colonies. J. Wildl. Manage 62:363-372.
- Walker, B. 2004. Effects of management practices on grassland birds: Brewer's Sparrow. Northern Prairie Wildlife Research Center, Jamestown, ND. Northern Prairie Wildlife Research Center Online.  
<http://www.npwrc.usgs.gov/resource/literatr/grasbird/brsp/brsp.htm>  
 (Version 12AUG2004).
- Wallestad, R. 1975. Life history and habitat requirements of sage grouse in central Montana. Montana Dept. Fish and Game. 66pp.
- White, E.M. 1986. Antiquity, original size and location of prairie dog towns in Wind Cave National Park. Final report for contract CX-1200-4-A040, Wind Cave National Park, Hot Springs, SD.
- Wood, J.E. 1965. Response of rodent populations to controls. J. of Wildl. Manage. 29:425-427.
- Wiggins, D.A. (2004, Sept. 22) Short-eared owl (*Asio flammeus*): a technical conservation



assessment. (Online). USDA Forest Service, Rocky Mountain Region. Available:  
<http://www.fs.fed.us/r2/projects/scp/assessments/shortearedowl.pdf>

Wyoming Natural Diversity Data Base 2004. Vegetation [Online]. Available:  
<http://uwadmnweb.uwyo.edu/WYNDD/> [Accessed Dec 2, 2004].

## VIII. MAPS

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# Current Distribution of Black-Tailed Prairie Dog Colonies Fort Pierre Geographic Area Fort Pierre National Grassland



## Legend

Active Black-tailed Prairie Dog Colony

Fort Pierre Geographic Area

Ownership

National Forest System Lands

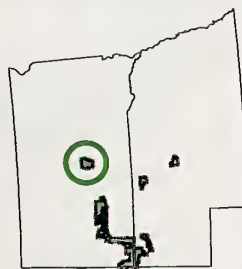
Tribal Lands

State Lands

Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map









# Current Distribution of Black-Tailed Prairie Dog Colonies North & Southeast Geographic Areas East Half Buffalo Gap National Grassland

## Legend

Active Black-tailed Prairie Dog Colony

Wall North, Wall Southeast

Ownership

Bureau of Reclamation

National Forest System Lands

Badlands National Park

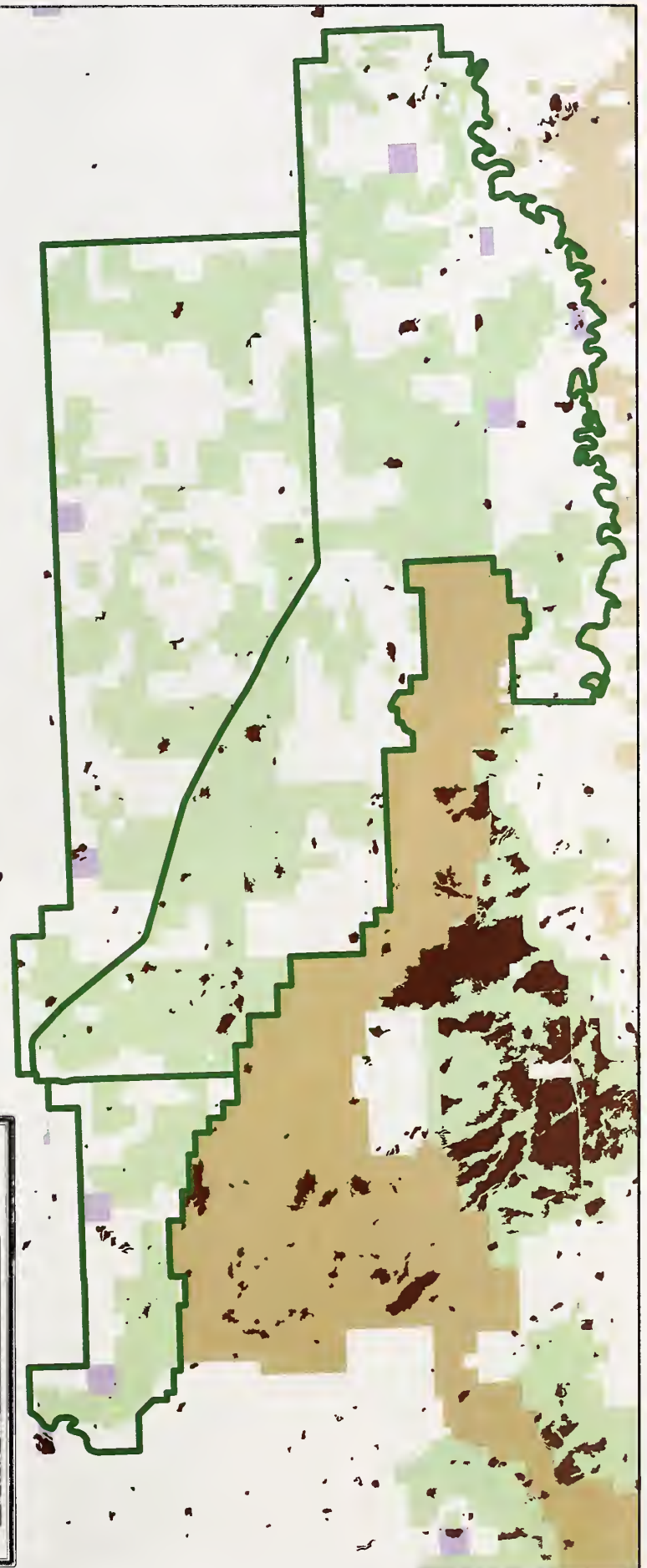
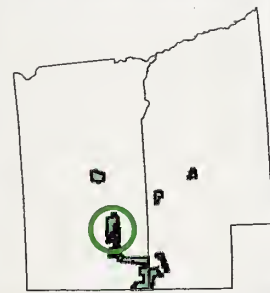
Tribal Lands

State Lands

Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map









# Current Distribution of Black-Tailed Prairie Dog Colonies Southwest Geographic Area East Half Buffalo Gap National Grassland

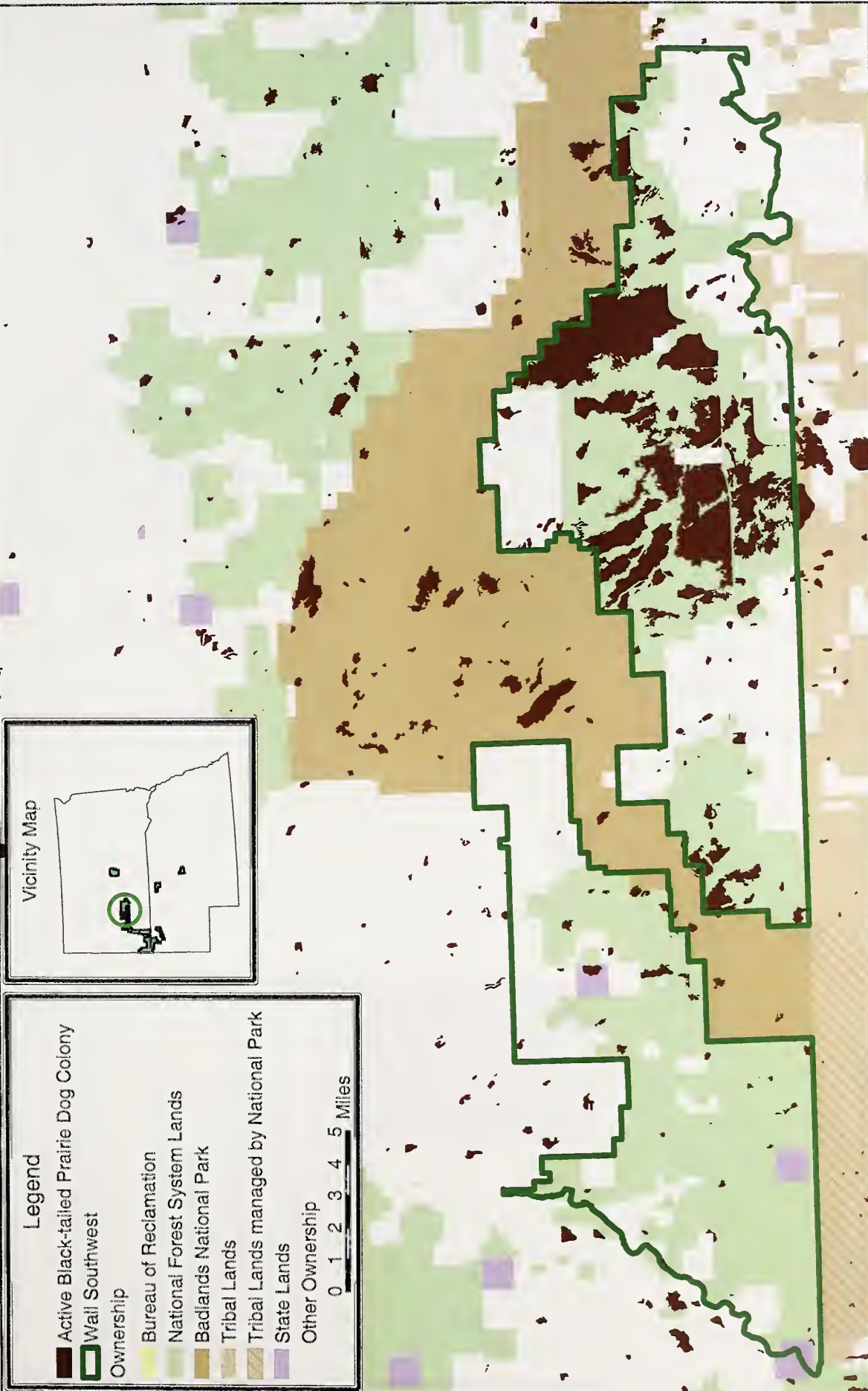


## Legend

- Active Black-tailed Prairie Dog Colony
- Wall Southwest Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map







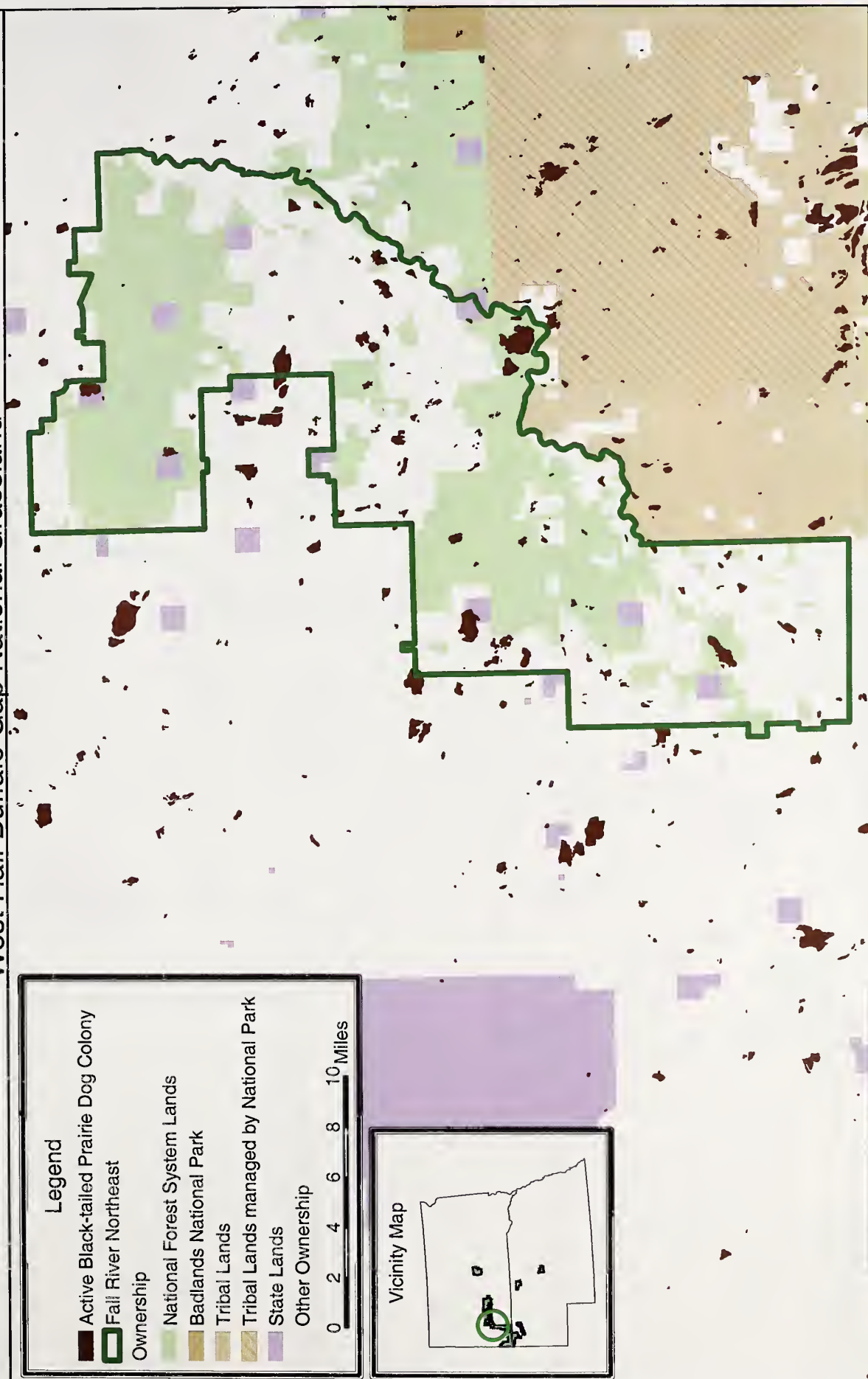
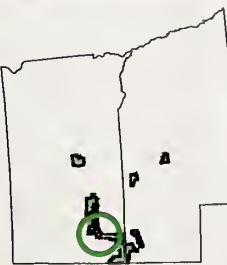
# Current Distribution of Black-Tailed Prairie Dog Colonies Northeast Geographic Area West Half Buffalo Gap National Grassland

## Legend

- Active Black-tailed Prairie Dog Colony
- Fall River Northeast Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map









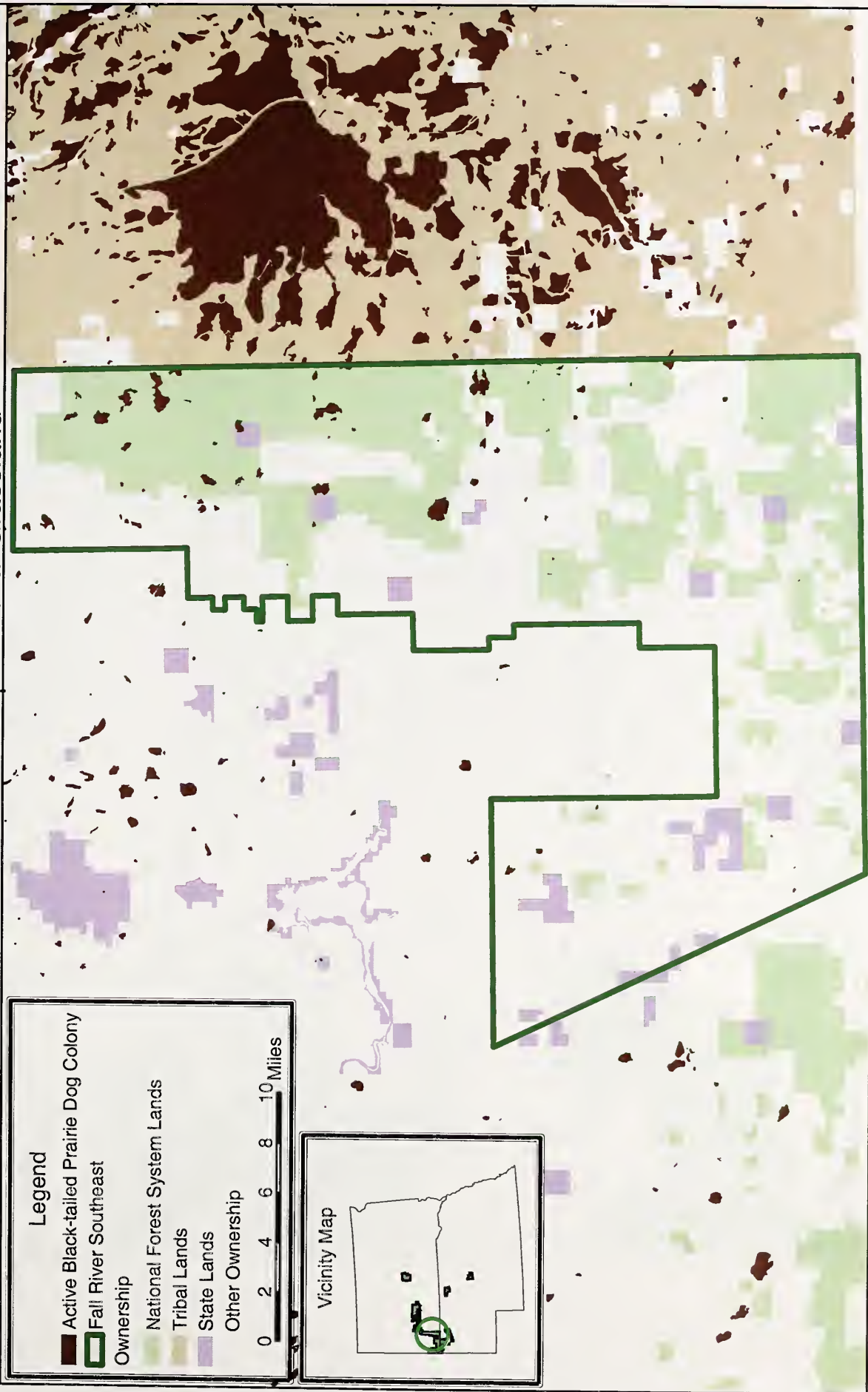
# Current Distribution of Black-Tailed Prairie Dog Colonies Southeast Geographic Area West Half Buffalo Gap National Grassland

## Legend

- Active Black-tailed Prairie Dog Colony
- Fall River Southeast Ownership
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

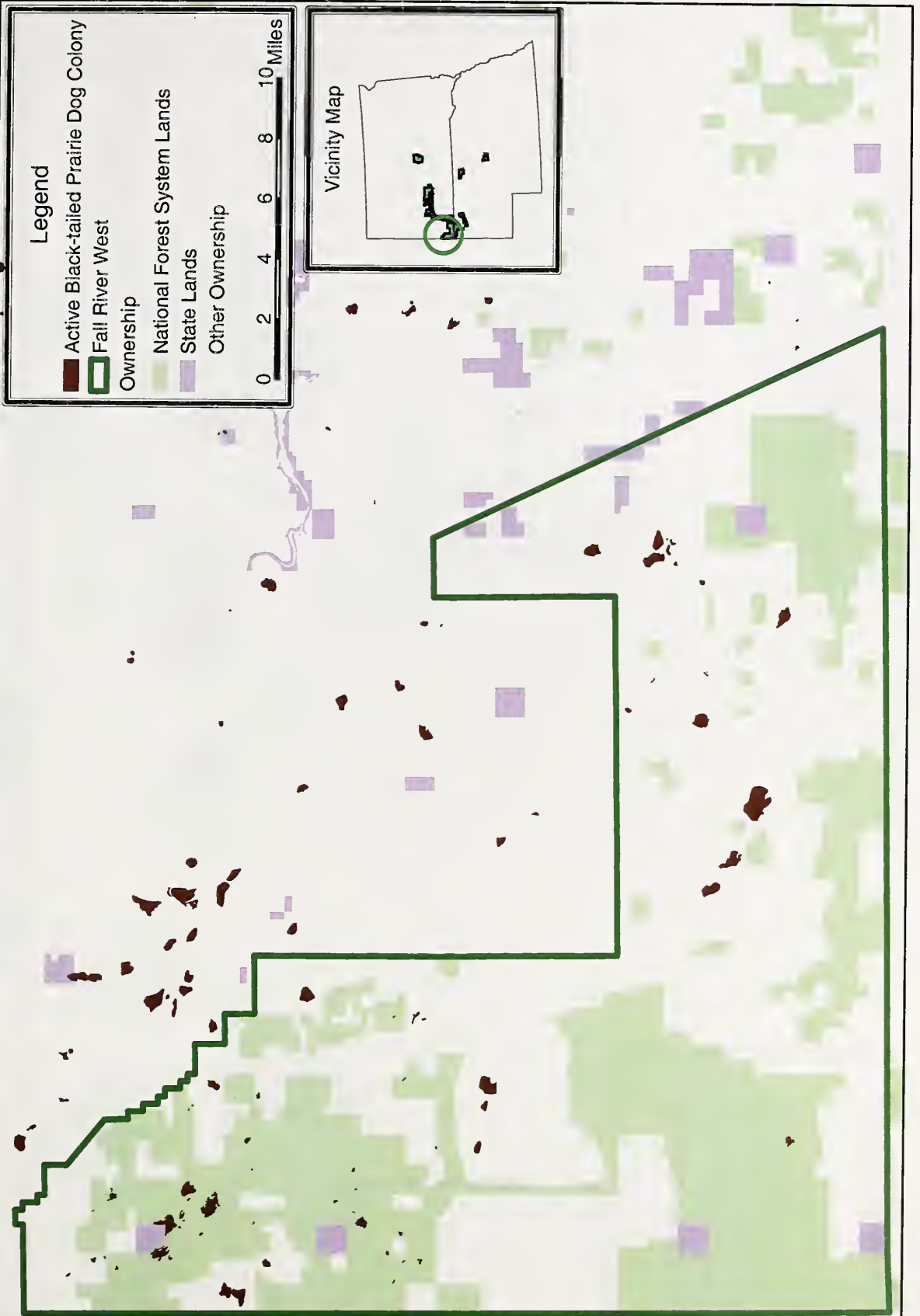






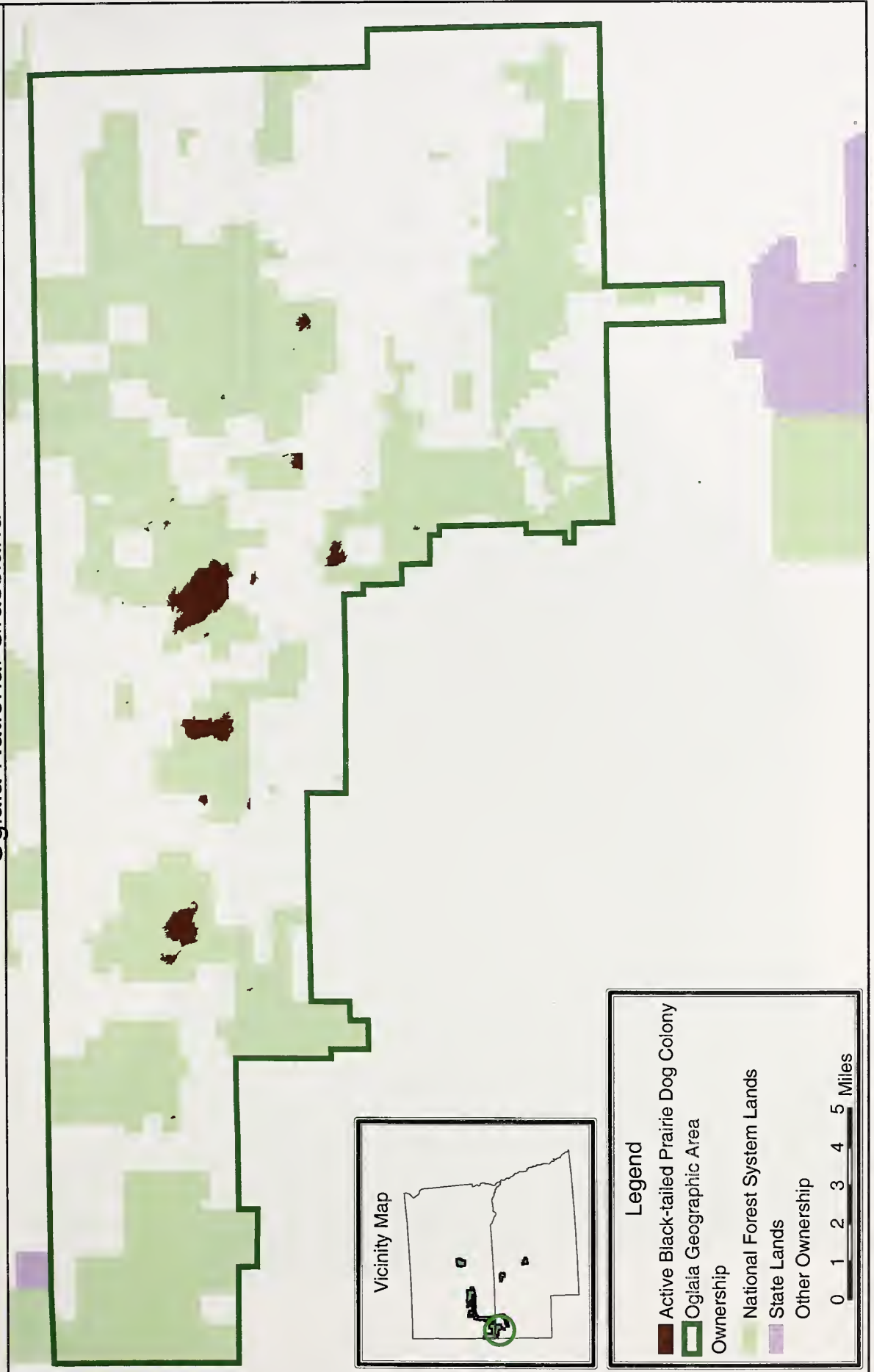


# Current Distribution of Black-Tailed Prairie Dog Colonies West Geographic Area West Half Buffalo Gap National Grassland





# Current Distribution of Black-Tailed Prairie Dog Colonies Oglala Geographic Area Oglala National Grassland



Vicinity Map

- Legend**
- Active Black-tailed Prairie Dog Colony
  - Oglala Geographic Area
  - National Forest System Lands
  - State Lands
  - Other Ownership
- 0 1 2 3 4 5 Miles





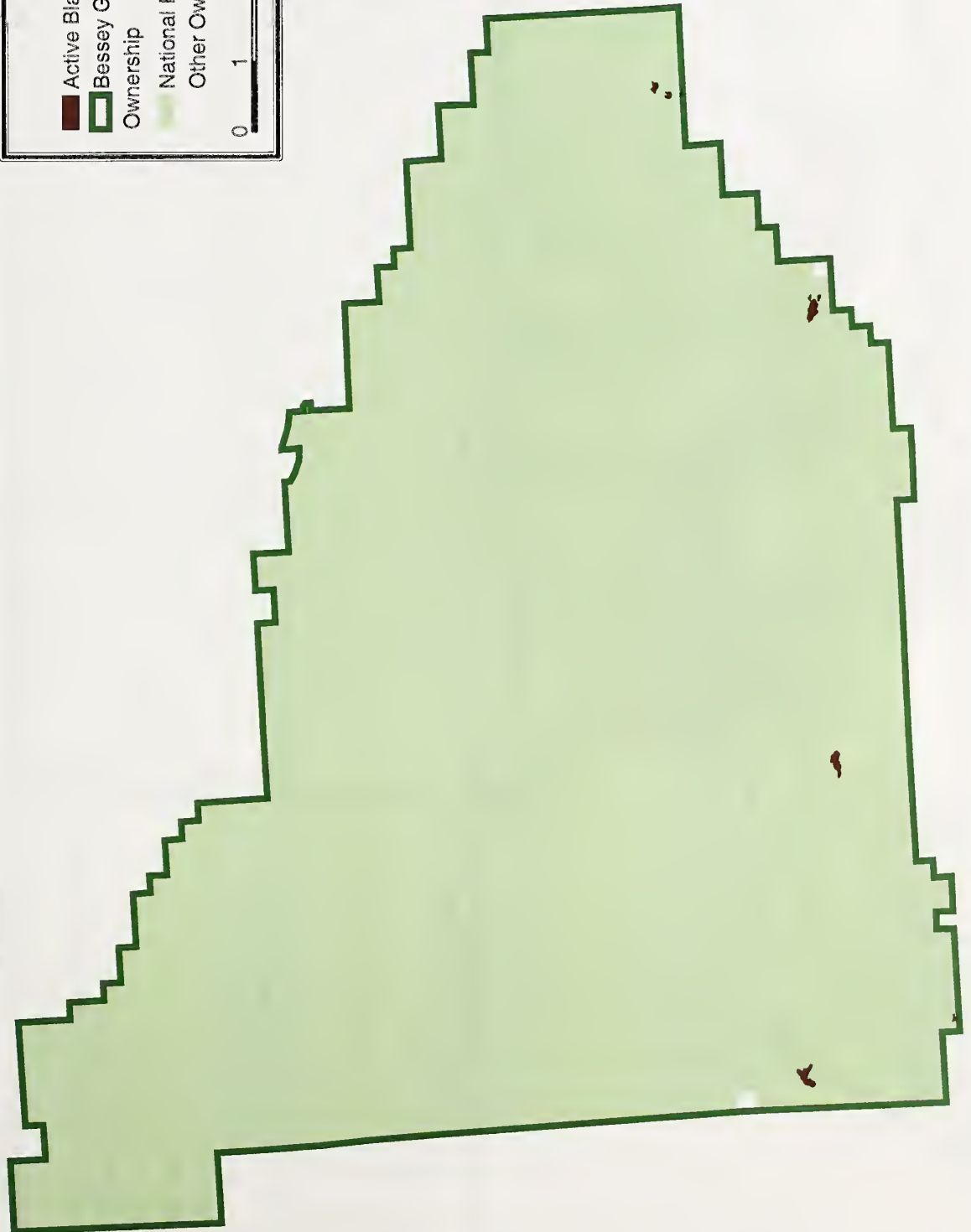
# Current Distribution of Black-Tailed Prairie Dog Colonies Bessey Geographic Area Bessey Ranger District



- Legend**
- Active Black-tailed Prairie Dog Colony
  - Bessey Geographic Area
  - Ownership
  - National Forest System Lands
  - Other Ownership



Vicinity Map









# Black-footed Ferret Observations East Half Buffalo Gap National Grassland

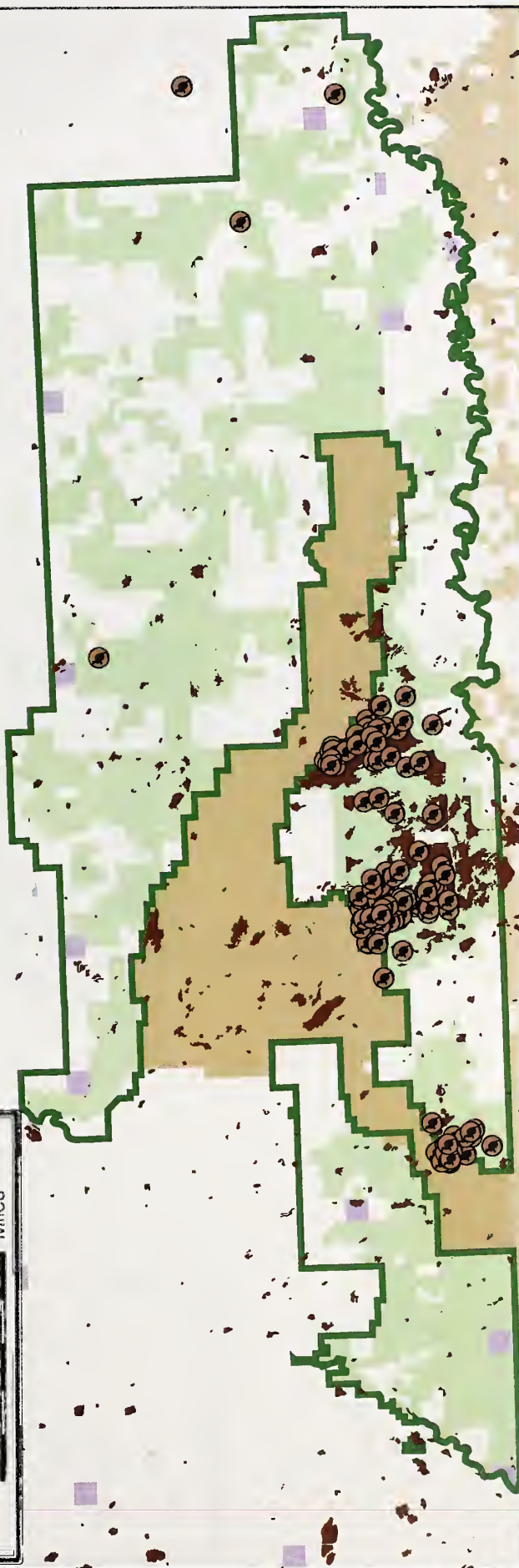


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Black-footed Ferret
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map







# Black-footed Ferret Observations Fort Pierre National Grassland

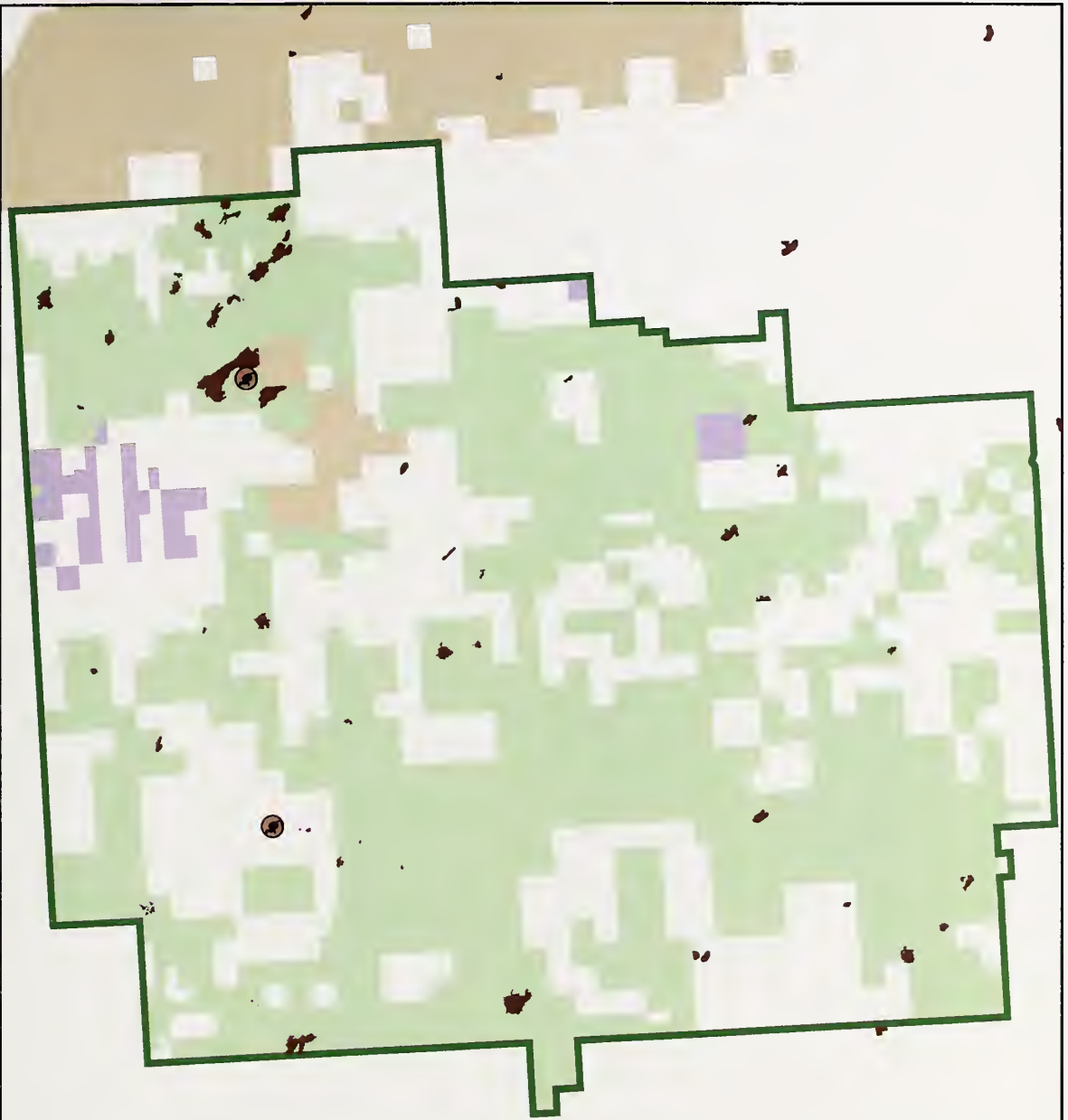


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Black-footed Ferret
- Owenship
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map









# Whooping Crane Observations Fort Pierre National Grassland

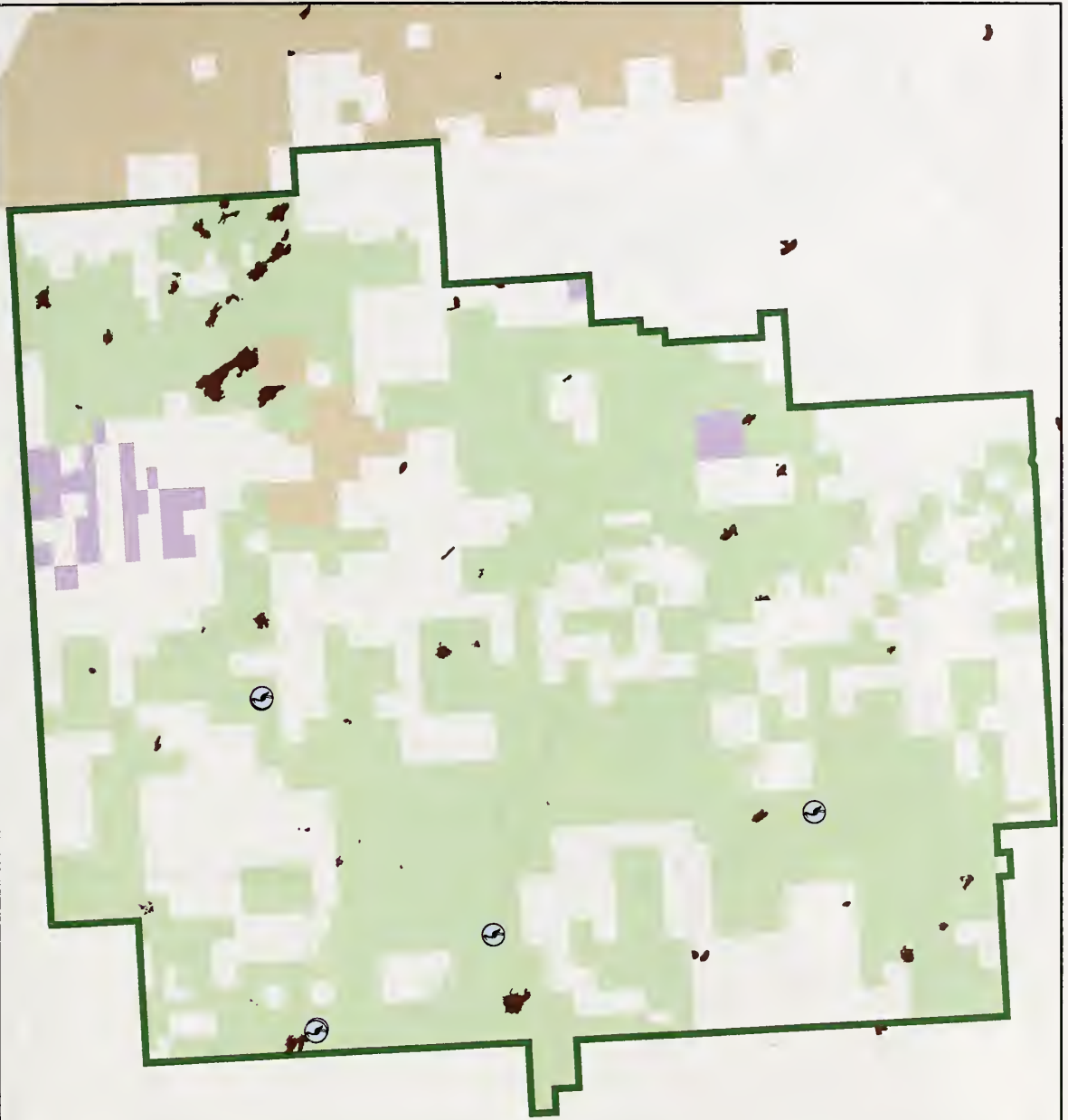
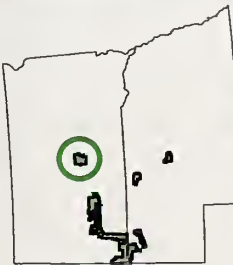


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Whooping Crane
- Ownership
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map

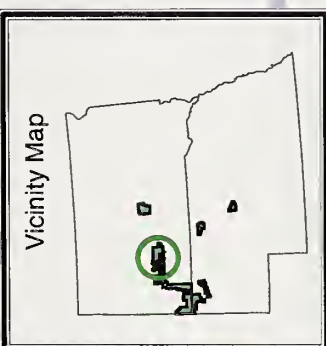








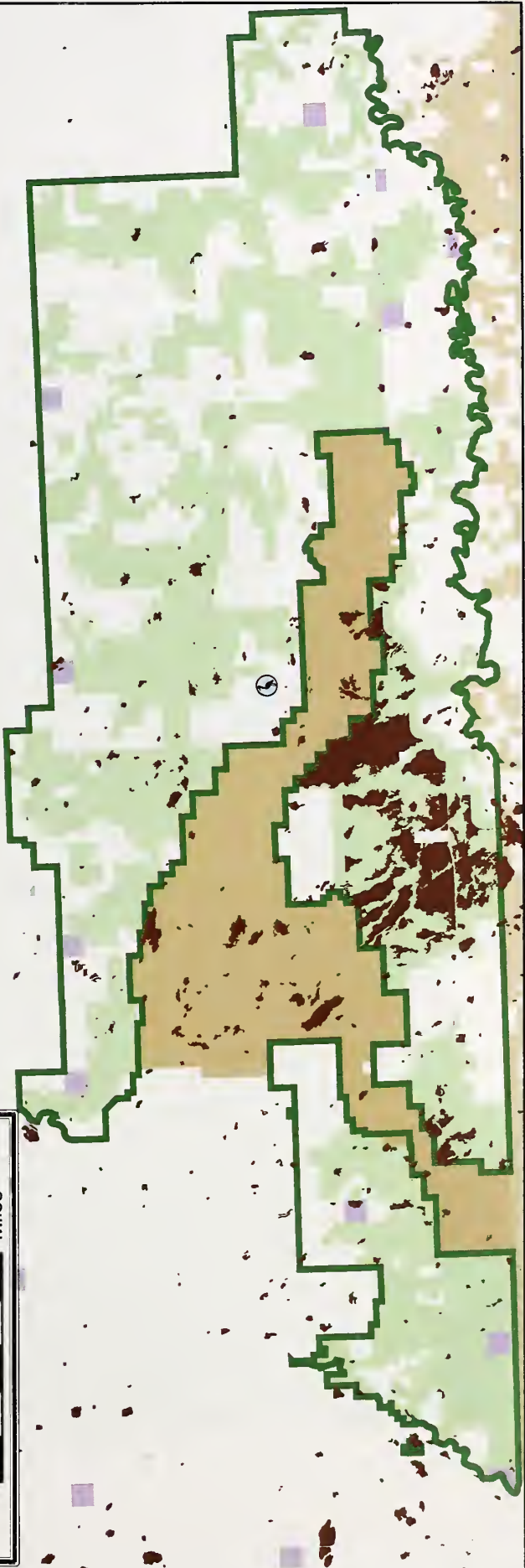
# Whooping Crane Observations East Half Buffalo Gap National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Whooping Crane
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles







# Whooping Crane Observations Bessey Ranger District

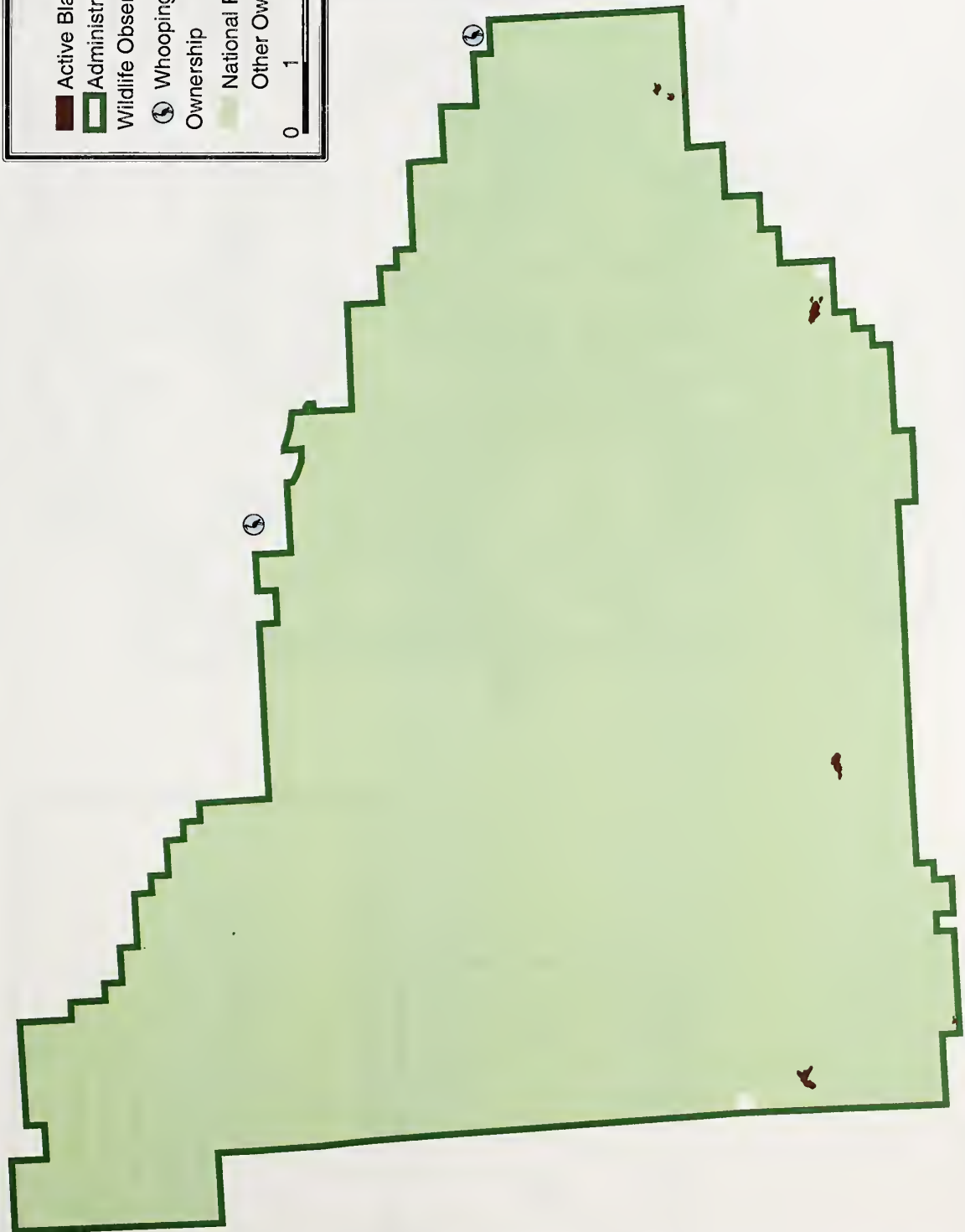


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Whooping Crane
- Ownership
  - National Forest System Lands
  - Other Ownership



Vicinity Map









# Bald Eagle Observations Fort Pierre National Grassland

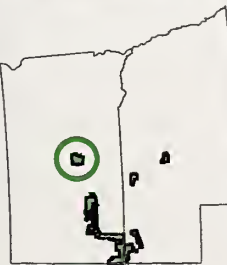


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Bald Eagle
- Ownership
  - National Forest System Lands
  - Tribal Lands
  - State Lands
  - Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map









# Bald Eagle Observations East Half Buffalo Gap National Grassland

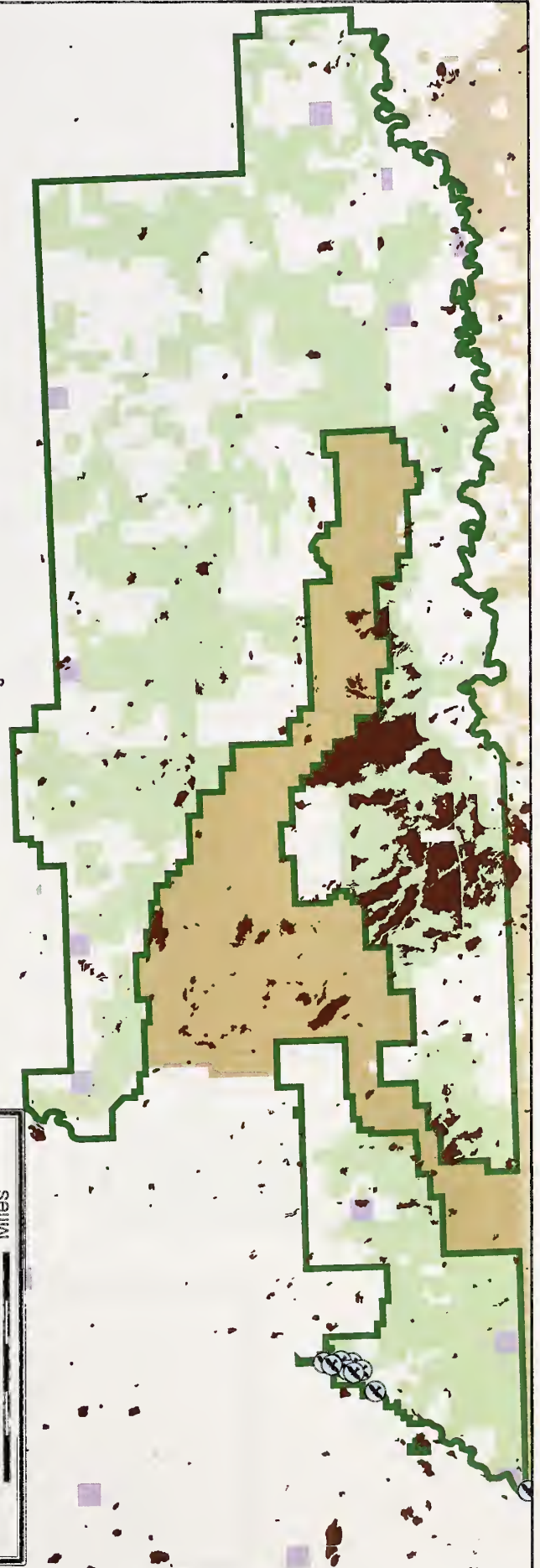


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Bald Eagle
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map







# Bald Eagle Observations West Half Buffalo Gap National Grassland

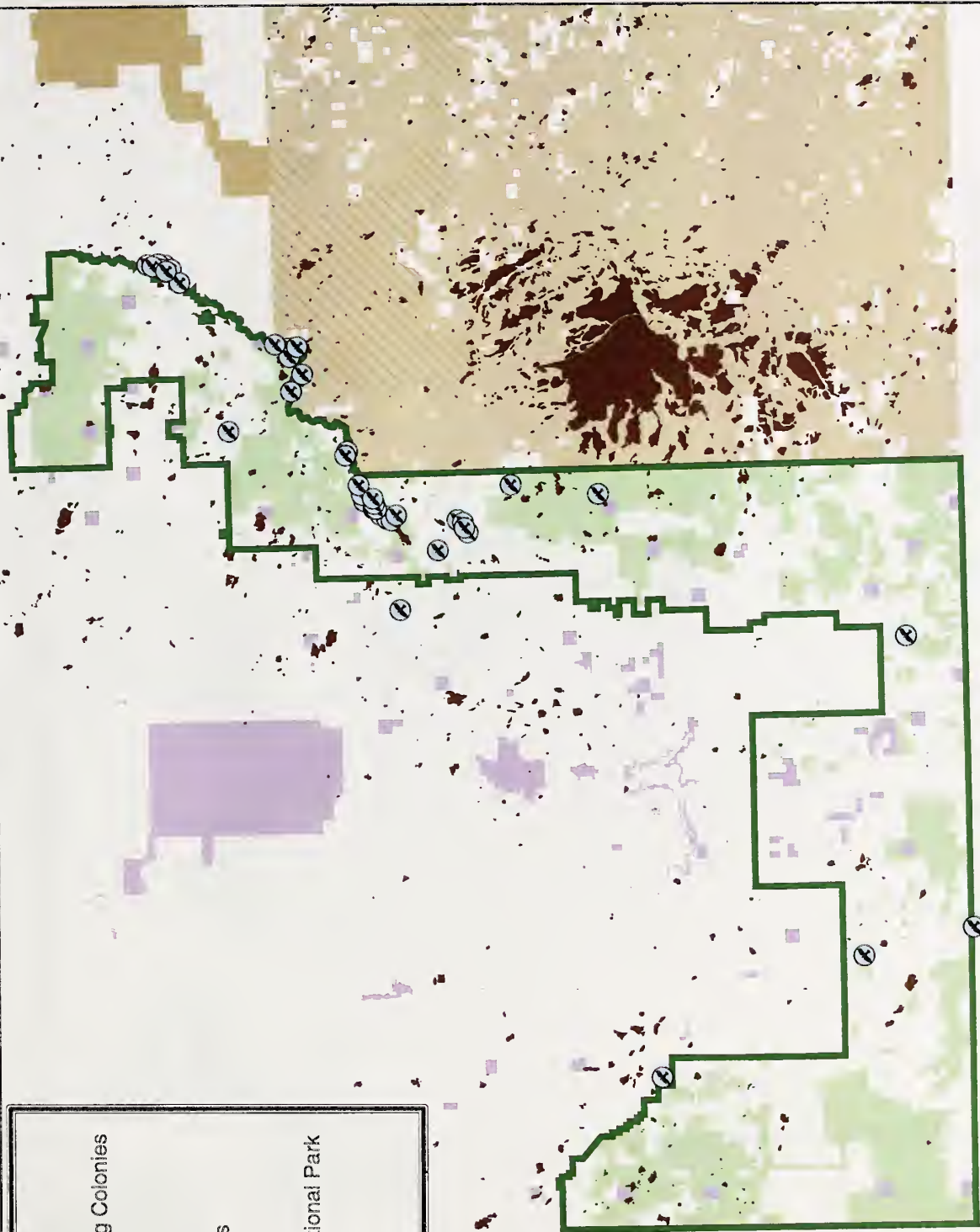
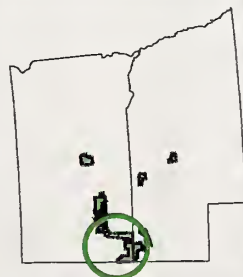


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Bald Eagle
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

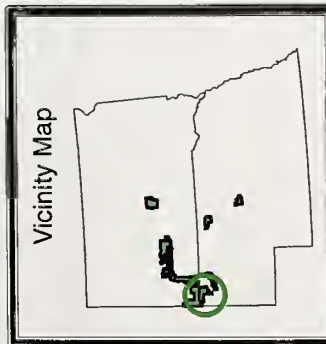
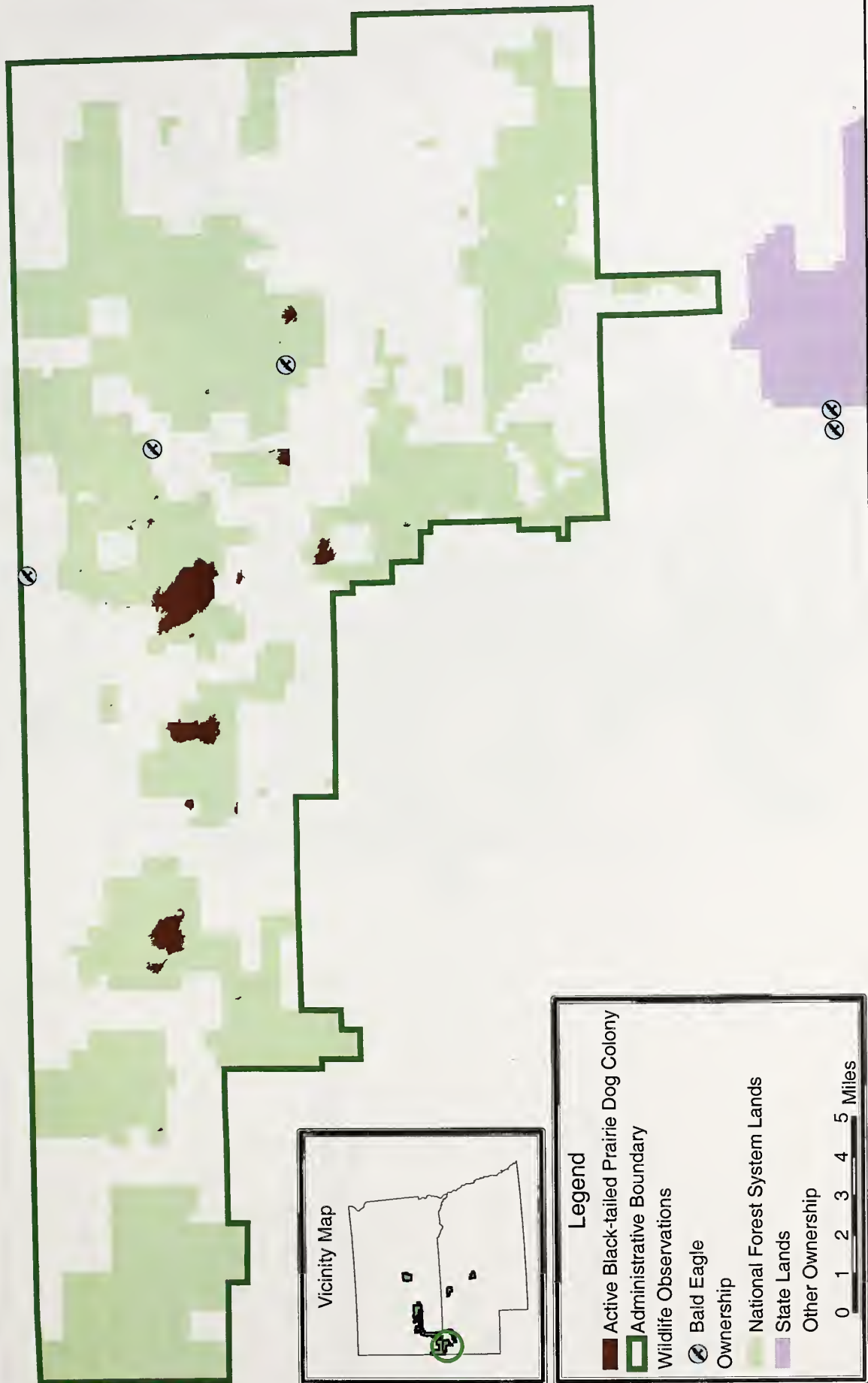








# Bald Eagle Observations Oglala National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Bald Eagle
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles







# Swift Fox Observations Fort Pierre National Grassland

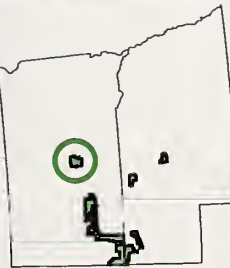


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Swift Fox
- Ownership
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map







# Swift Fox Observations East Half Buffalo Gap National Grassland

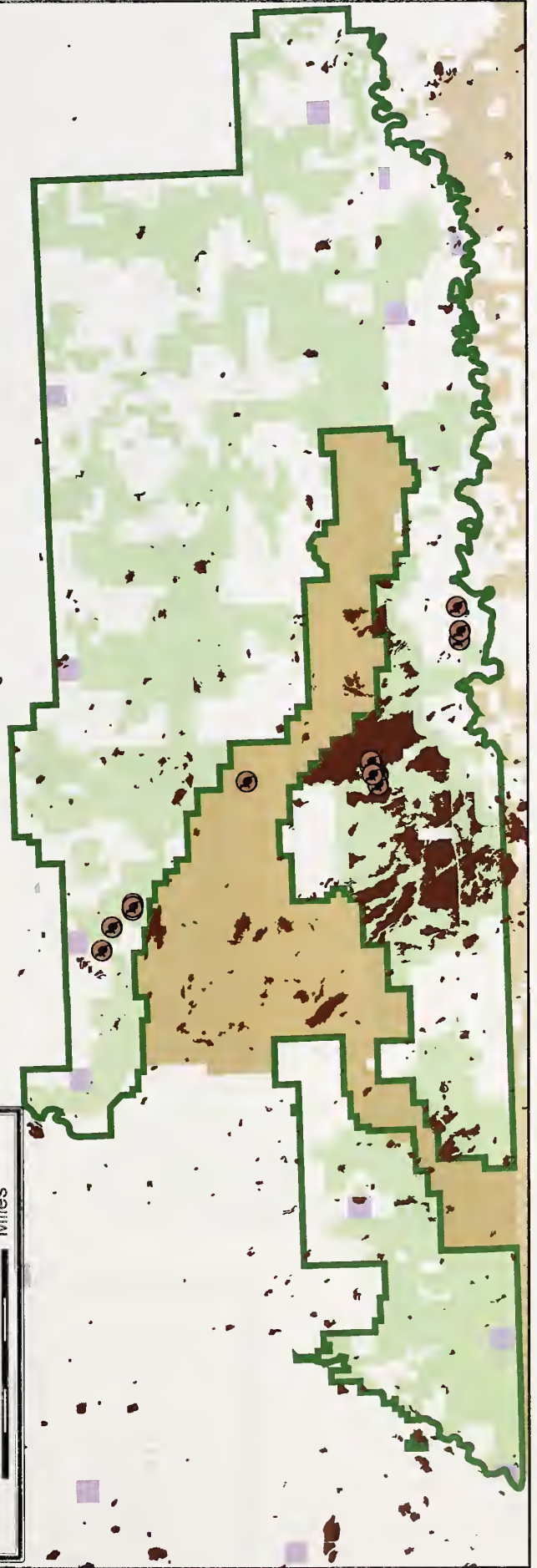


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Swift Fox
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map







# Swift Fox Observations West Half Buffalo Gap National Grassland

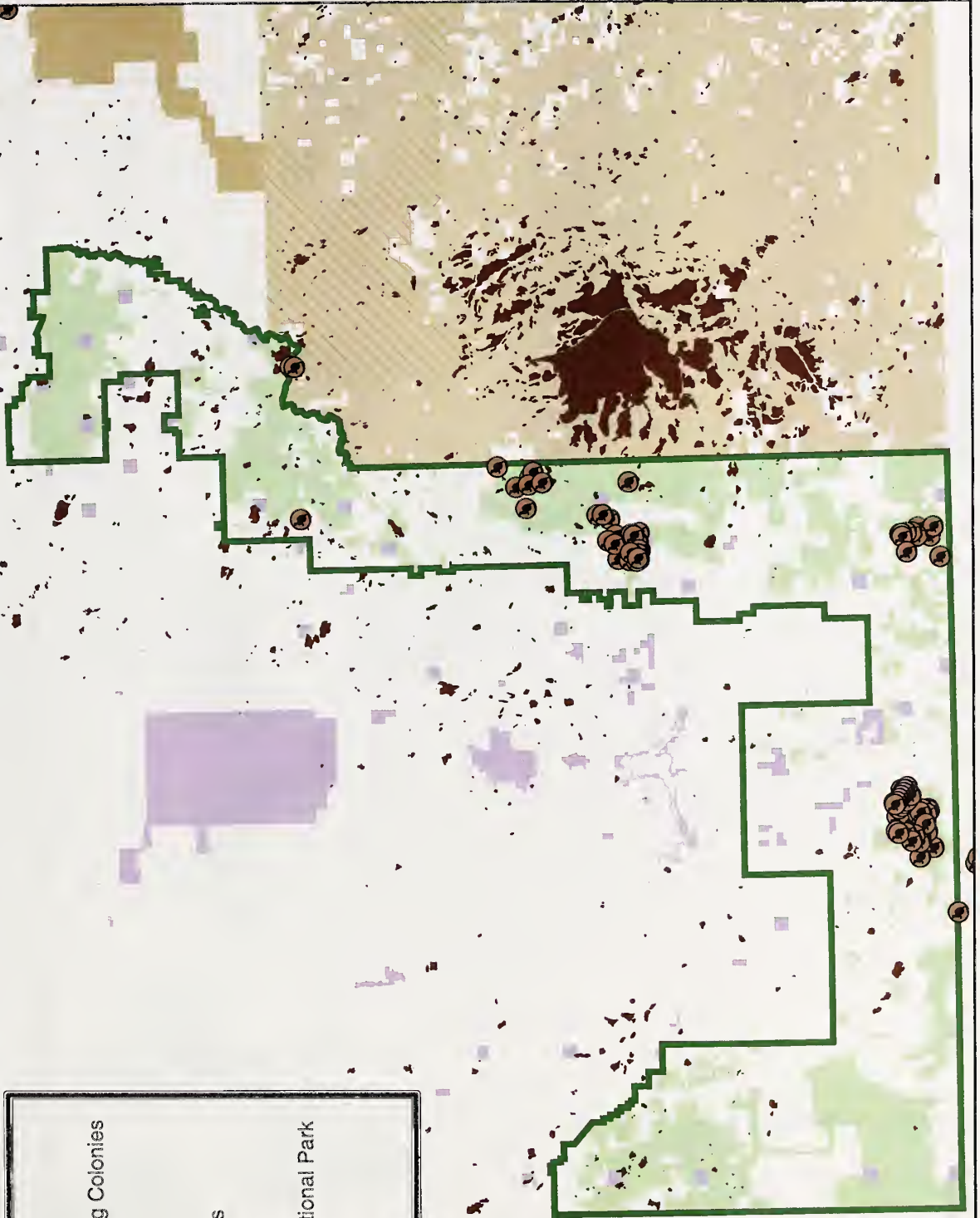


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Swift Fox
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

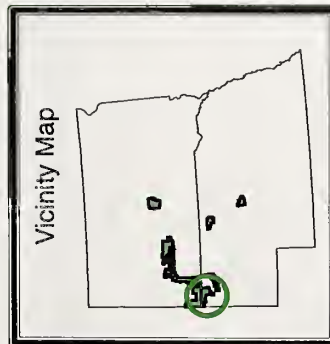
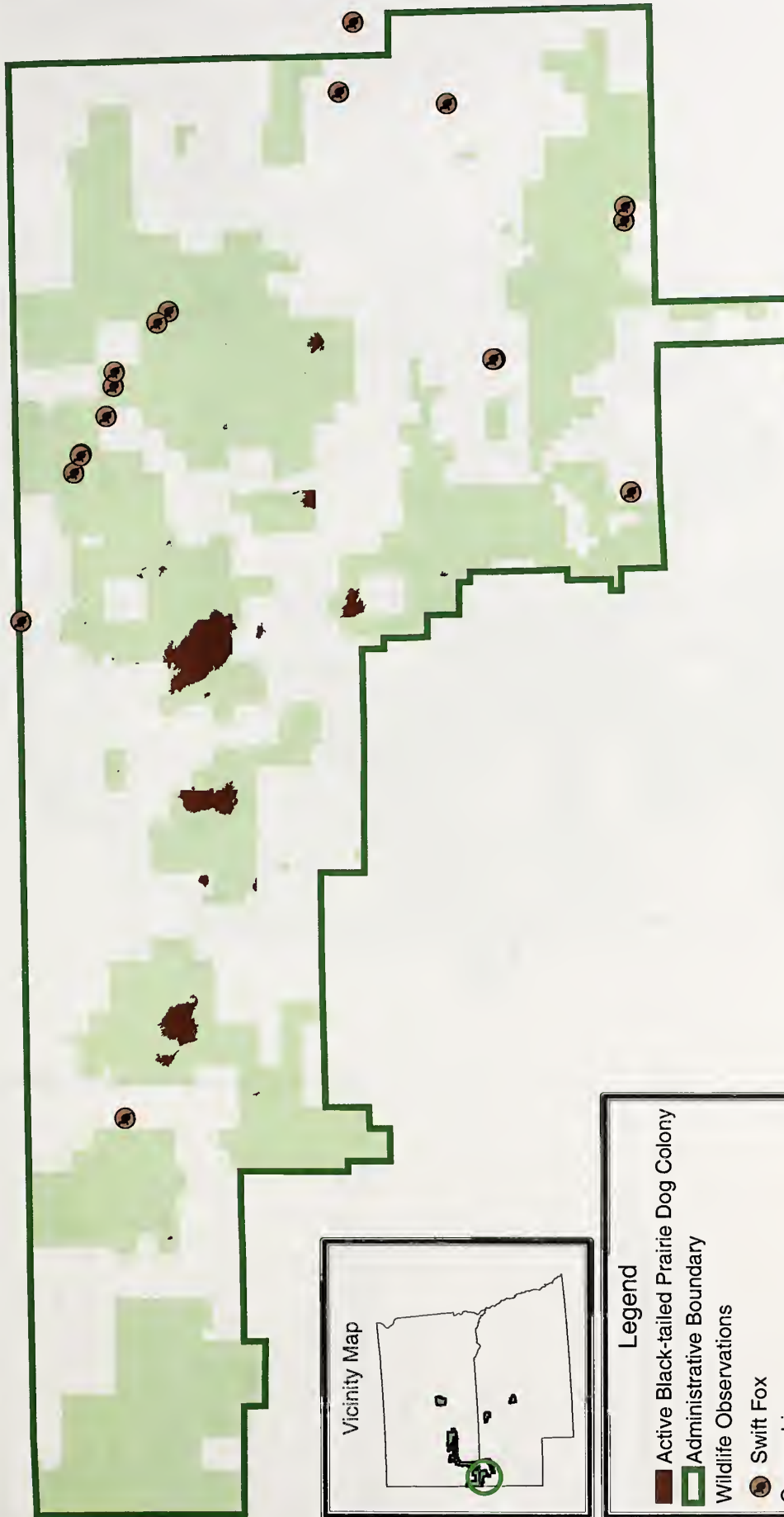








# Swift Fox Observations Oglala National Grassland



## Legend

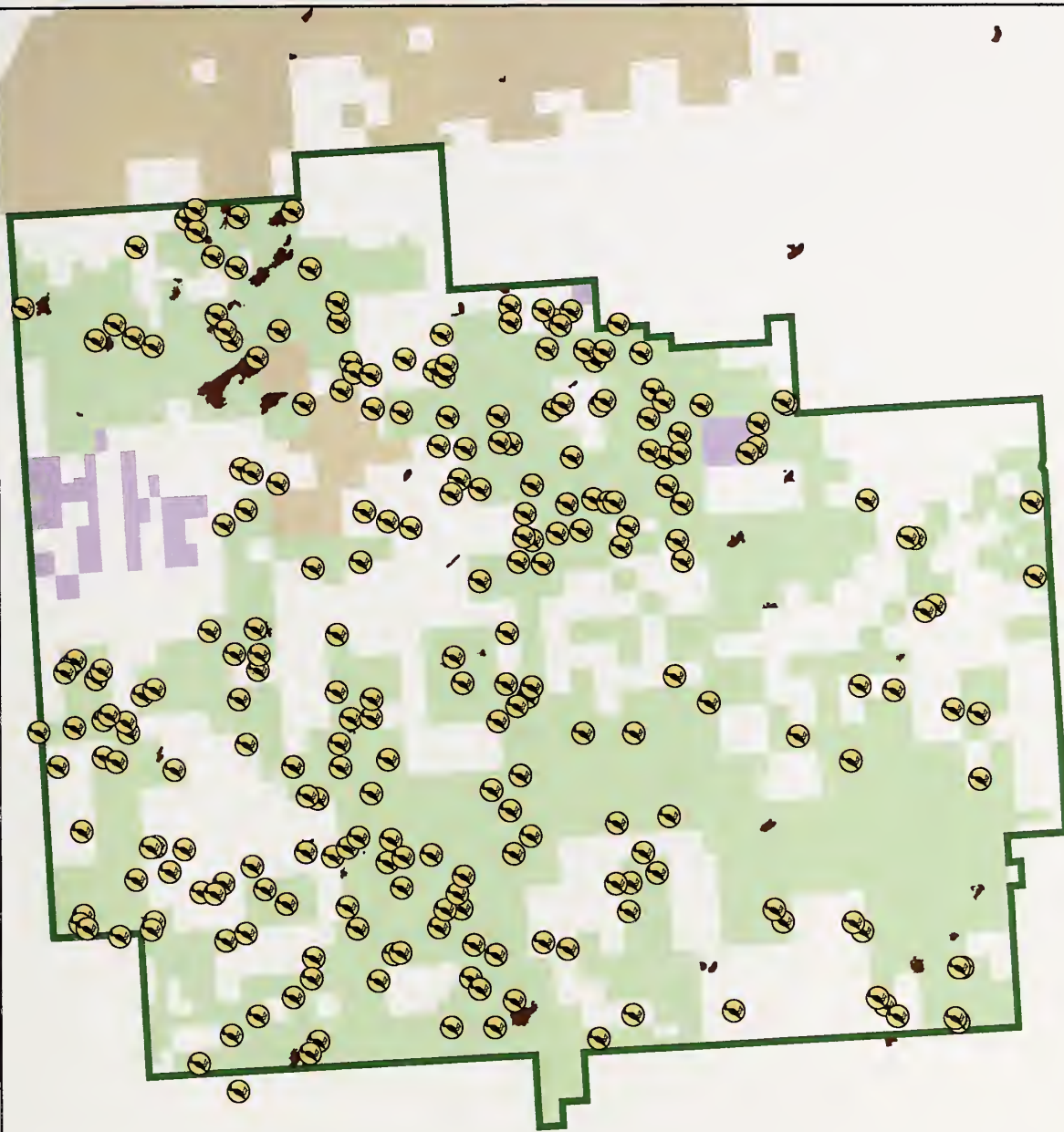
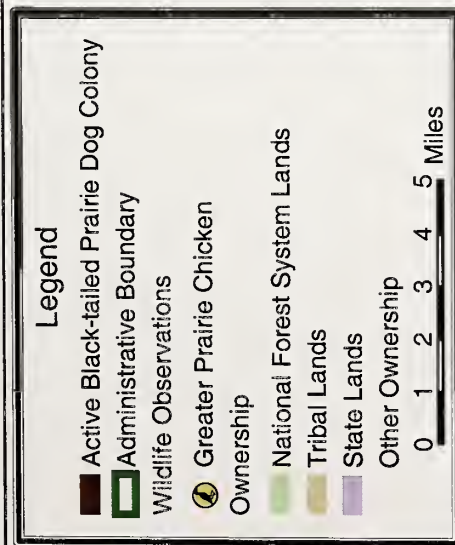
- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Swift Fox Ownership
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles





# Greater Prairie Chicken Observations Fort Pierre National Grassland









# Long-Billed Curlew Observations Fort Pierre National Grassland



## Legend

- Active Black-tailed Prairie Dog Colony
- Wildlife Observations
- Long-billed Curlew
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

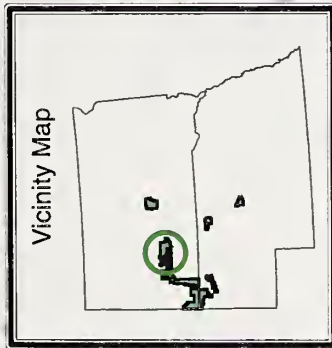
## Vicinity Map







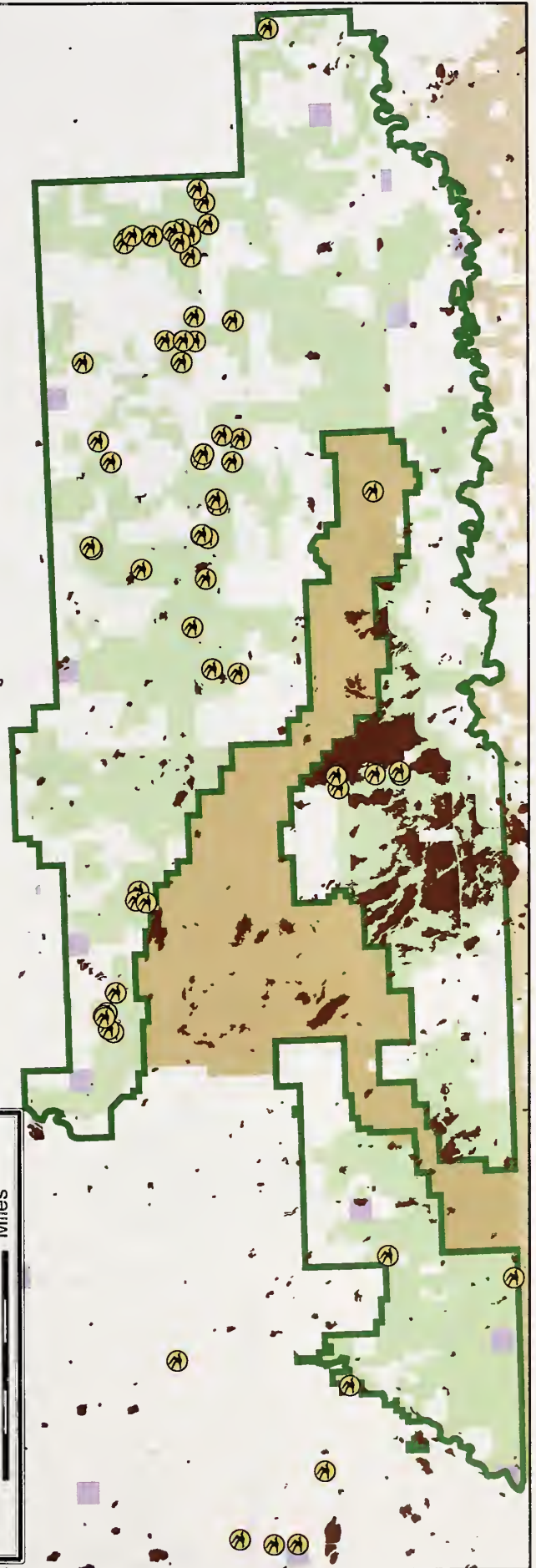
# Long-Billed Curlew Observations East Half Buffalo Gap National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Long-billed Curlew
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles





# Long-Billed Curlew Observations West Half Buffalo Gap National Grassland

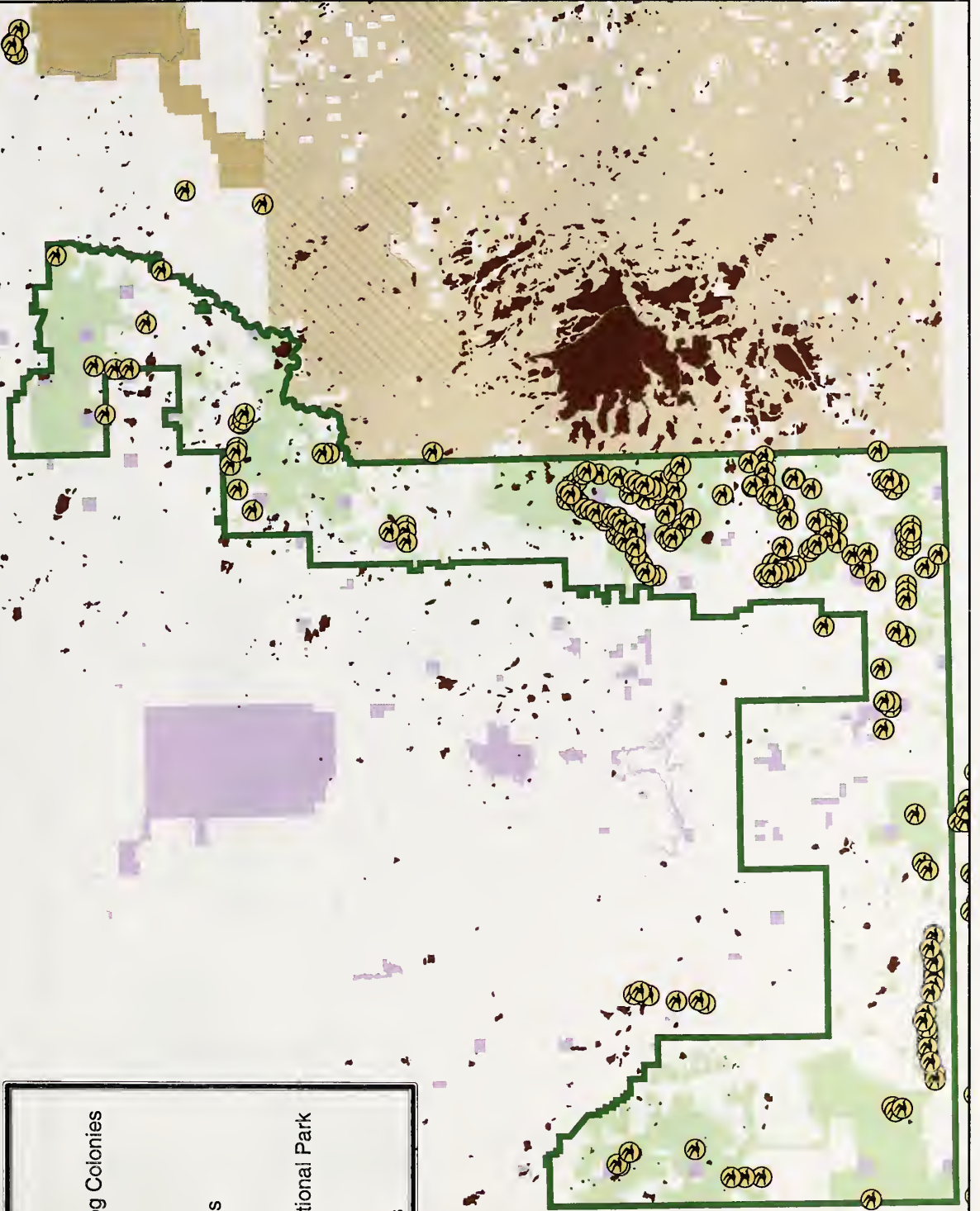


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Long-billed Curlew
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

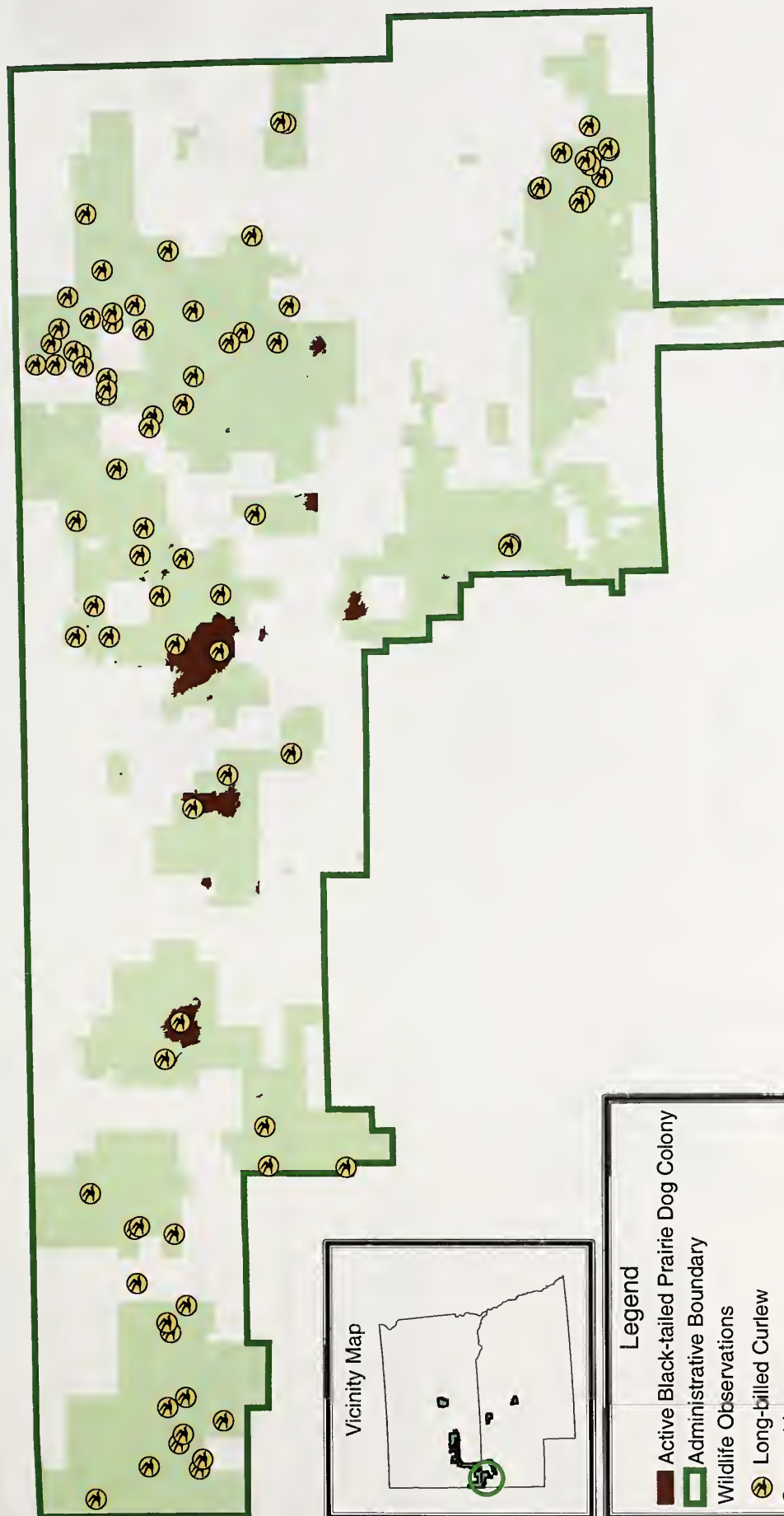








# Long-Billed Curlew Observations Oglala National Grassland



**Legend**

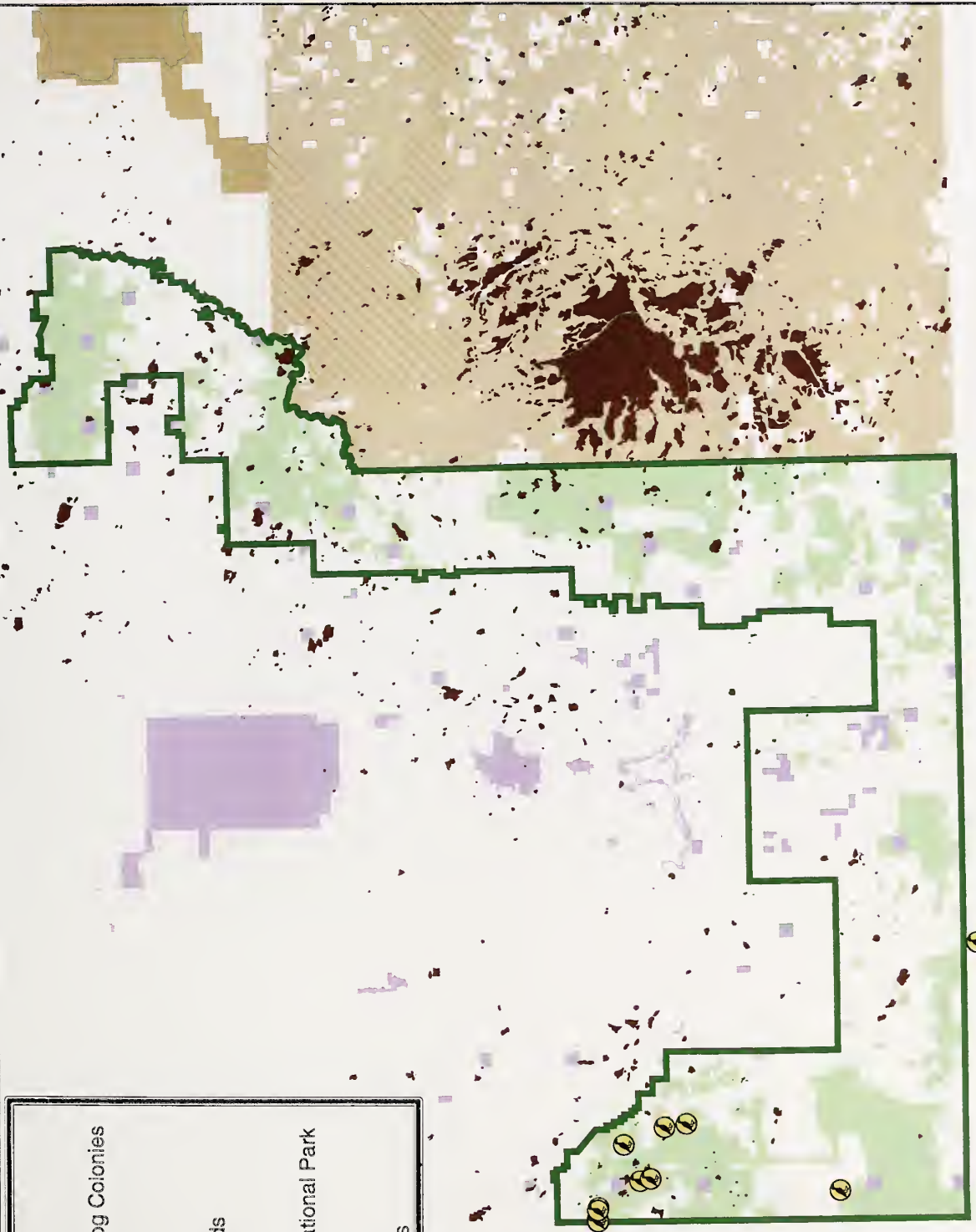
- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Long-billed Curlew
- Ownership
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles





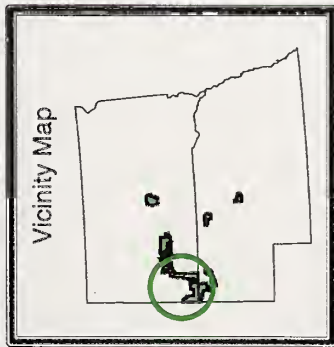
# Greater Sage Grouse Observations West Half Buffalo Gap National Grassland



**Legend**

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Sage Grouse
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles





# Northern Harrier Observations West Half Buffalo Gap National Grassland

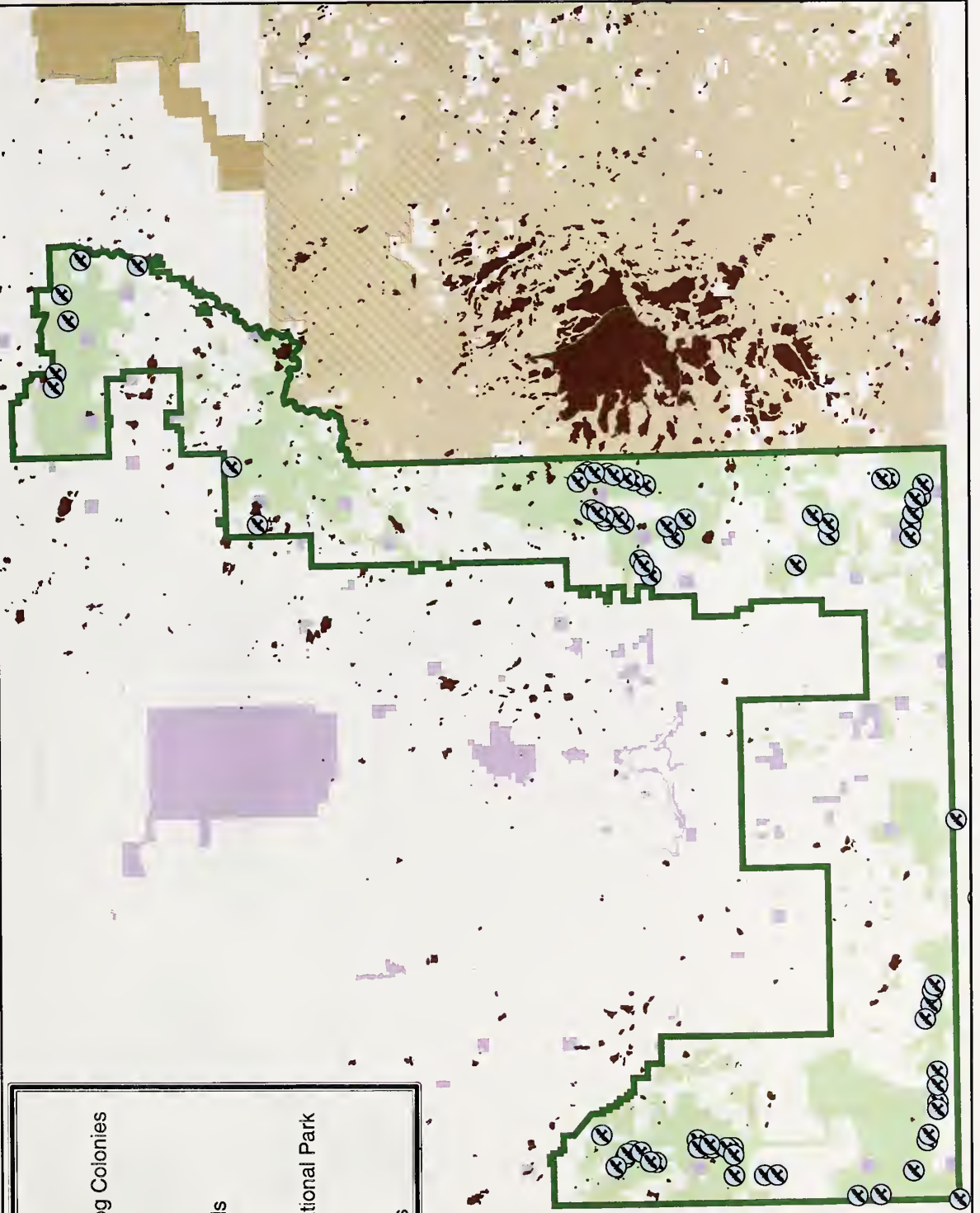


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Northern Harrier
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

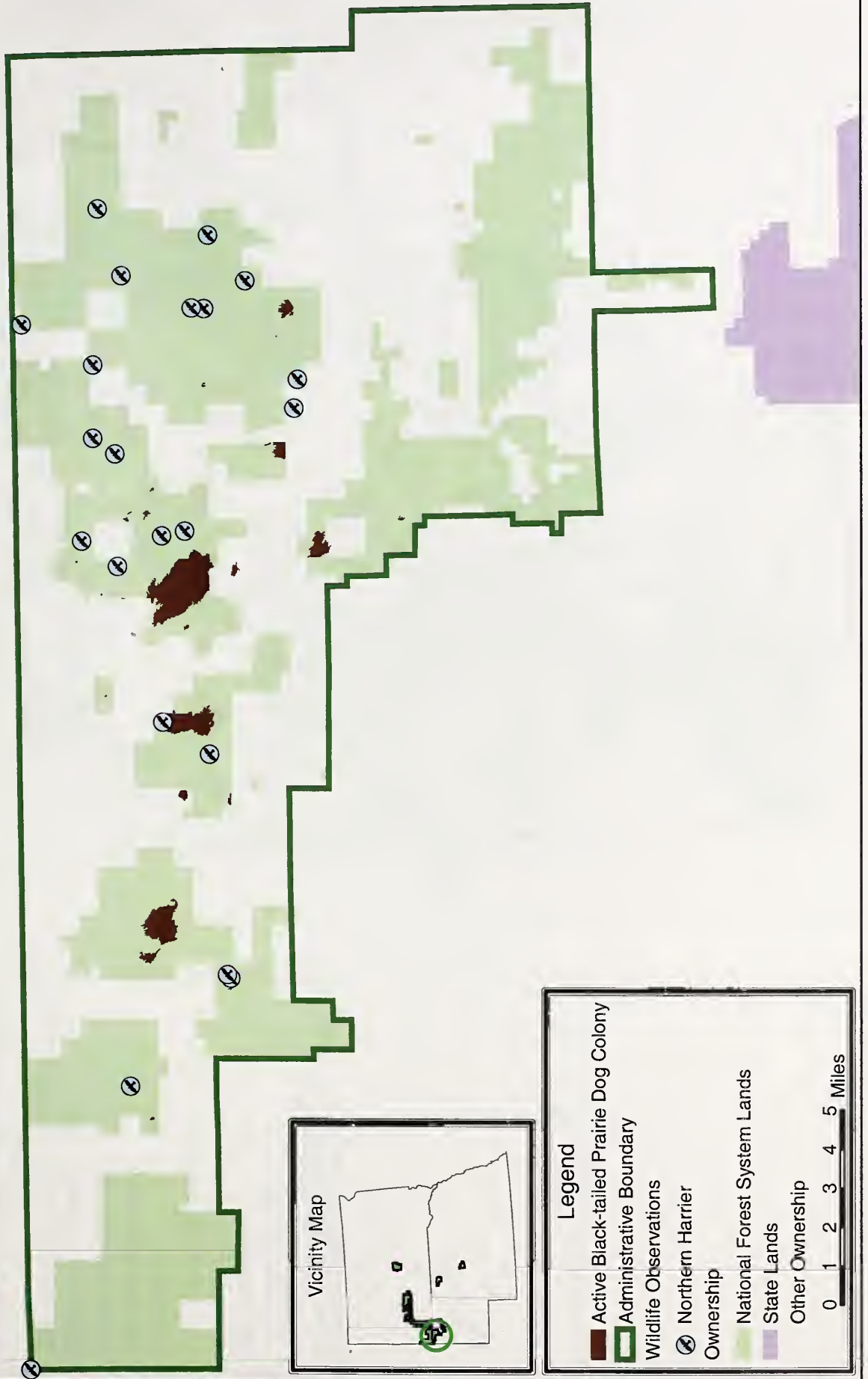








# Northern Harrier Observations Oglala National Grassland









# Ferruginous Hawk Observations Fort Pierre National Grassland

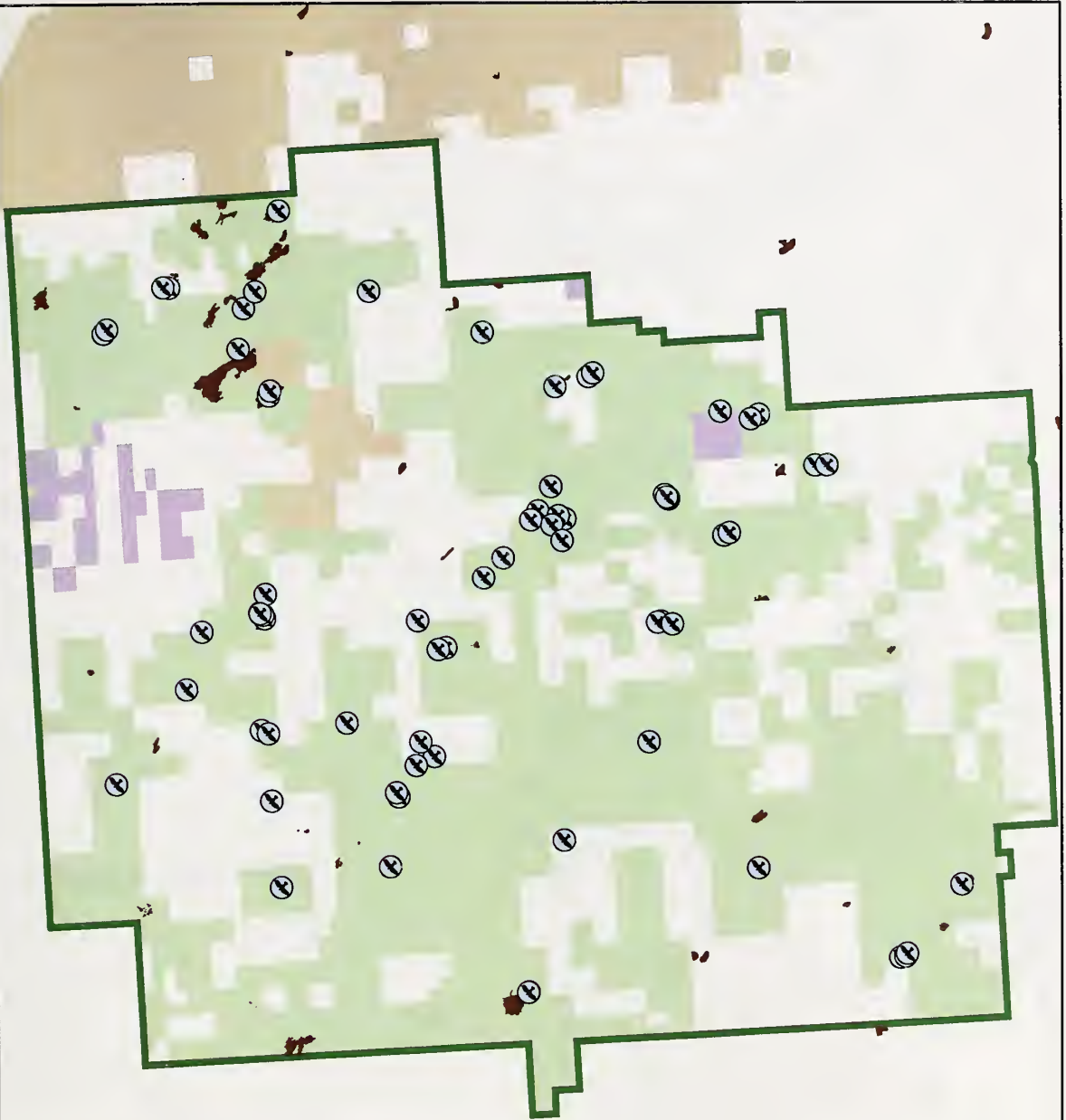
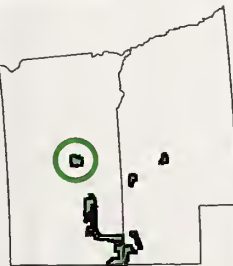


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Ferruginous Hawk Ownership
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map







# Ferruginous Hawk Observations East Half Buffalo Gap National Grassland



## Legend

Active Black-tailed Prairie Dog Colony

Administrative Boundary

Wildlife Observations

Ferruginous Hawk

Ownership

Bureau of Reclamation

National Forest System Lands

Badlands National Park

Tribal Lands

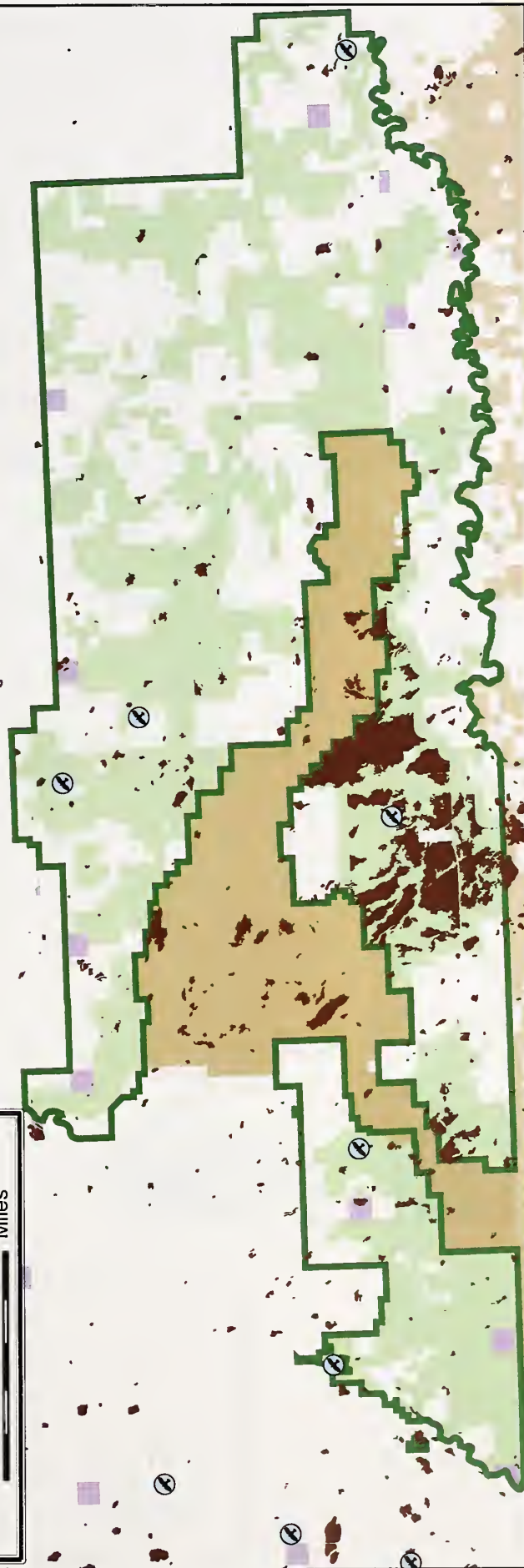
Tribal Lands managed by National Park

State Lands

Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map









# Ferruginous Hawk Observations West Half Buffalo Gap National Grassland

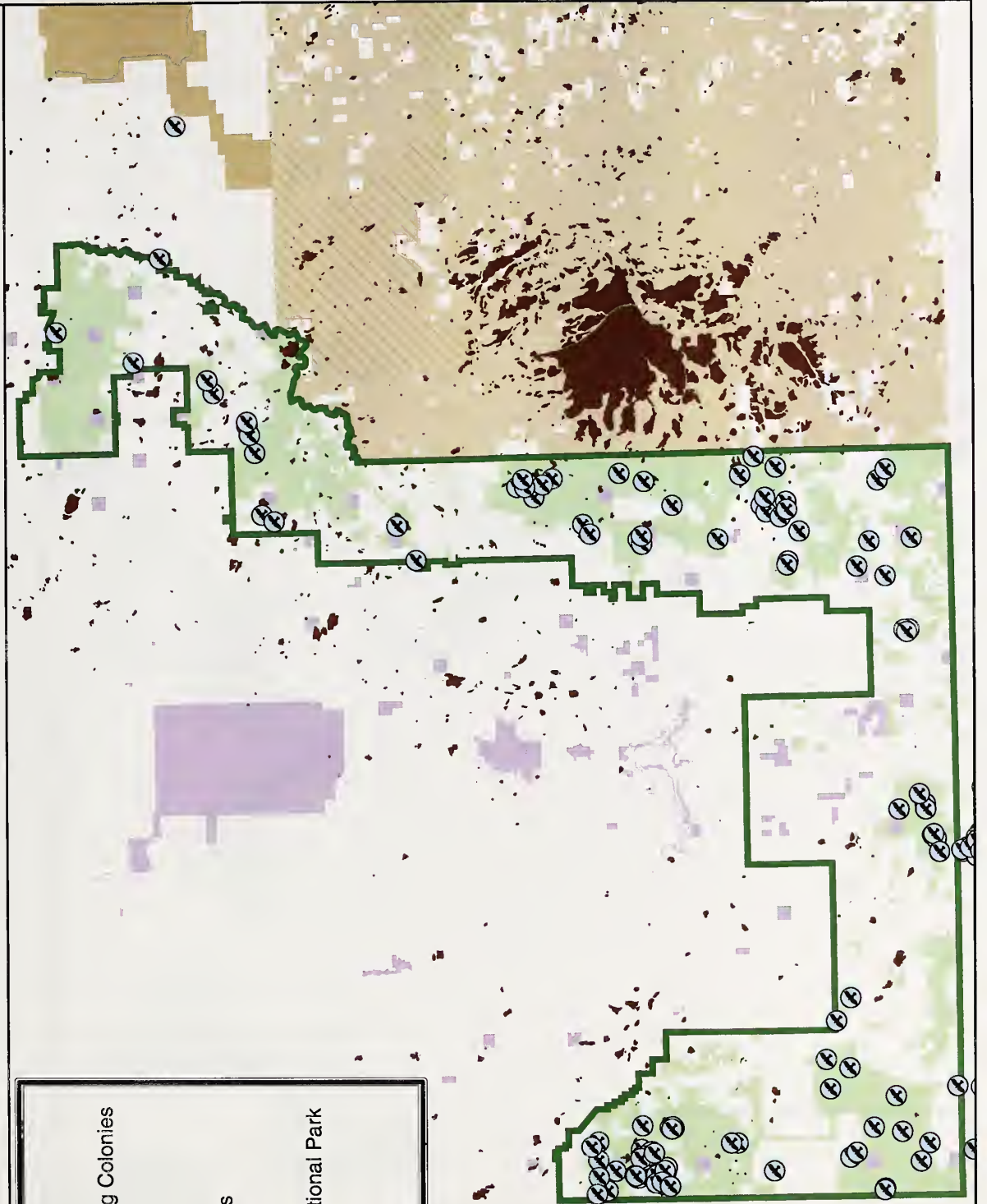


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Ferruginous Hawk
- Ownership
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

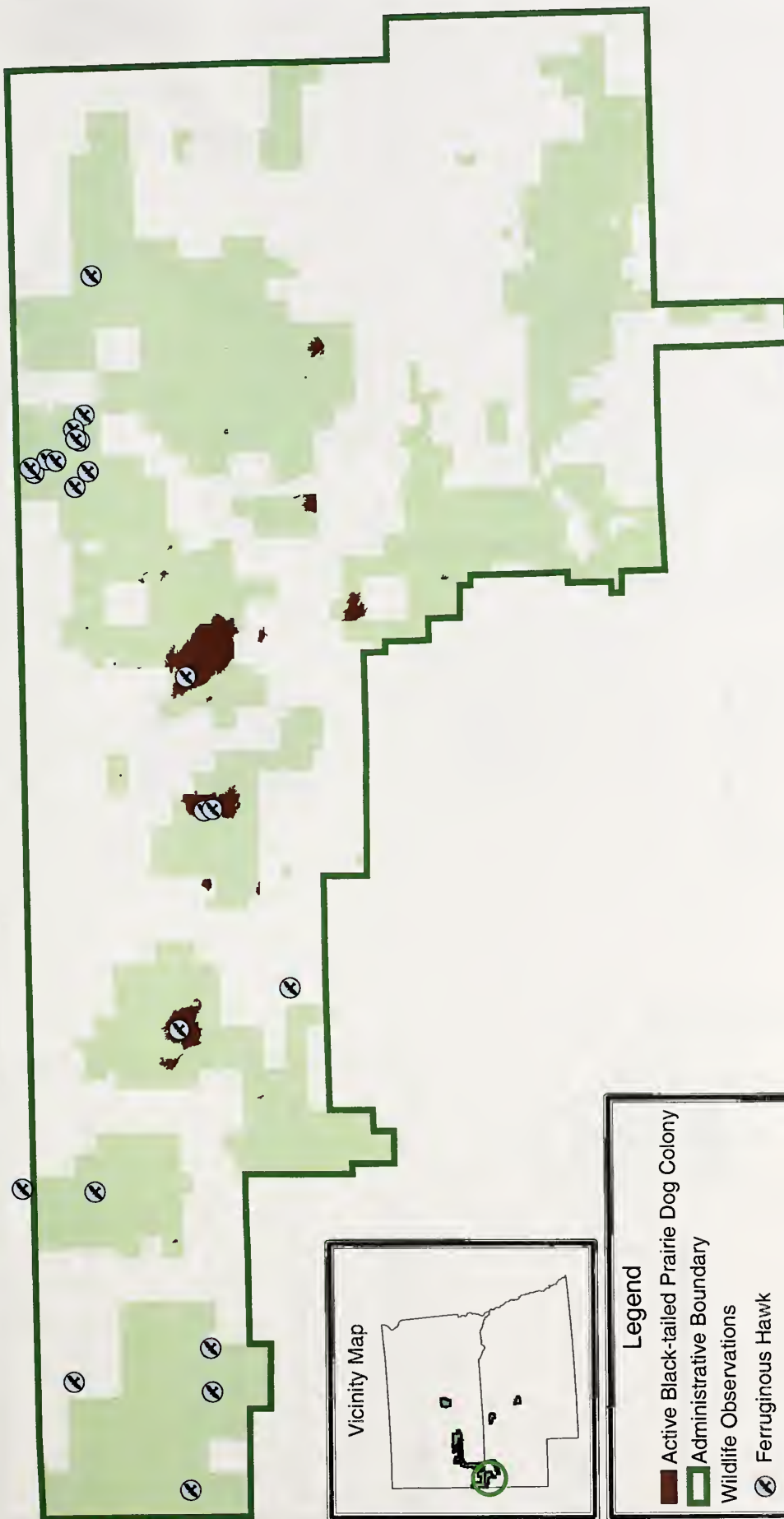








# Ferruginous Hawk Observations Oglala National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Ferruginous Hawk Observations
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles





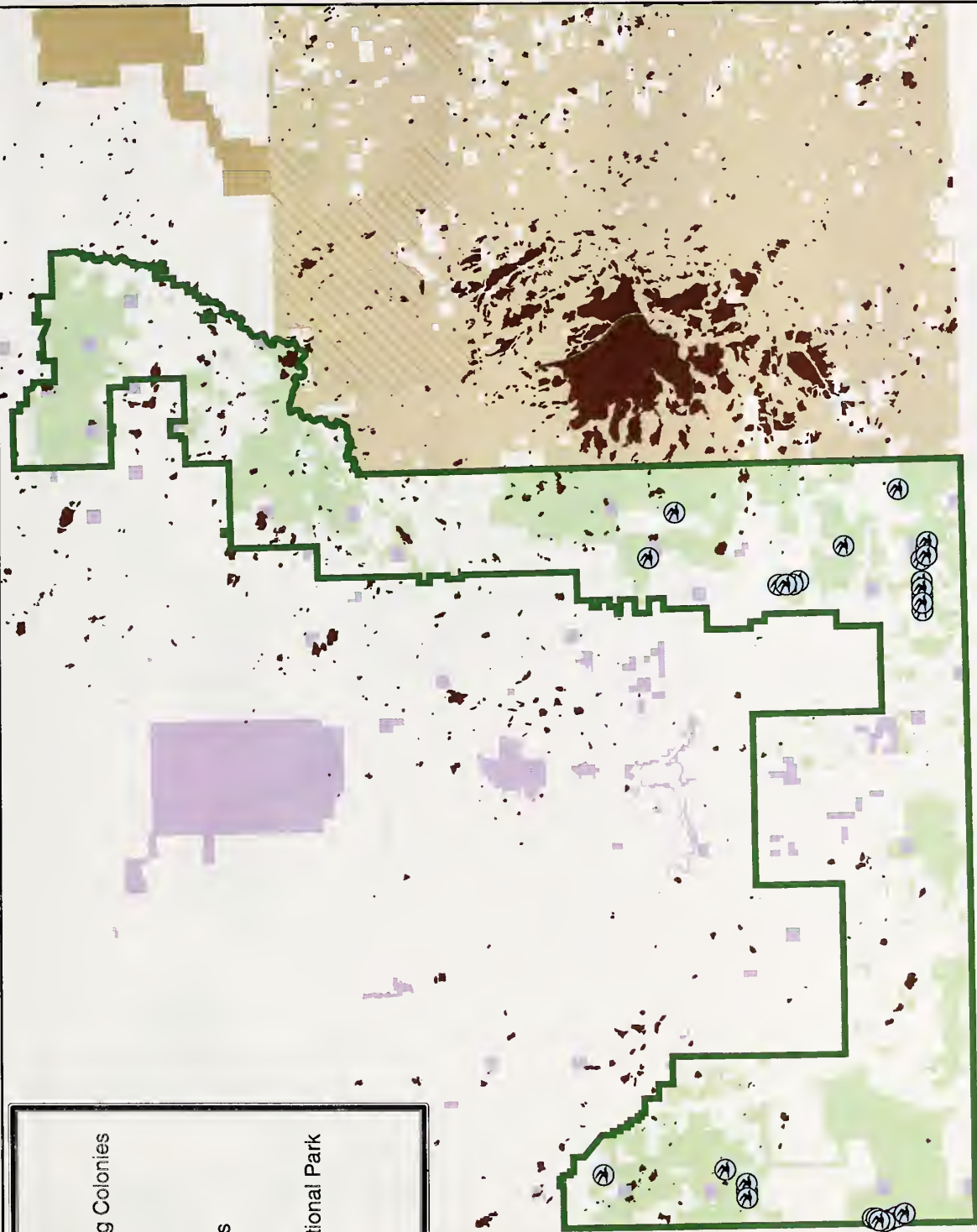
# Chestnut Collared Longspur Observations West Half Buffalo Gap National Grassland



**Legend**

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Chestnut-collared Longspur
- Ownership**
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

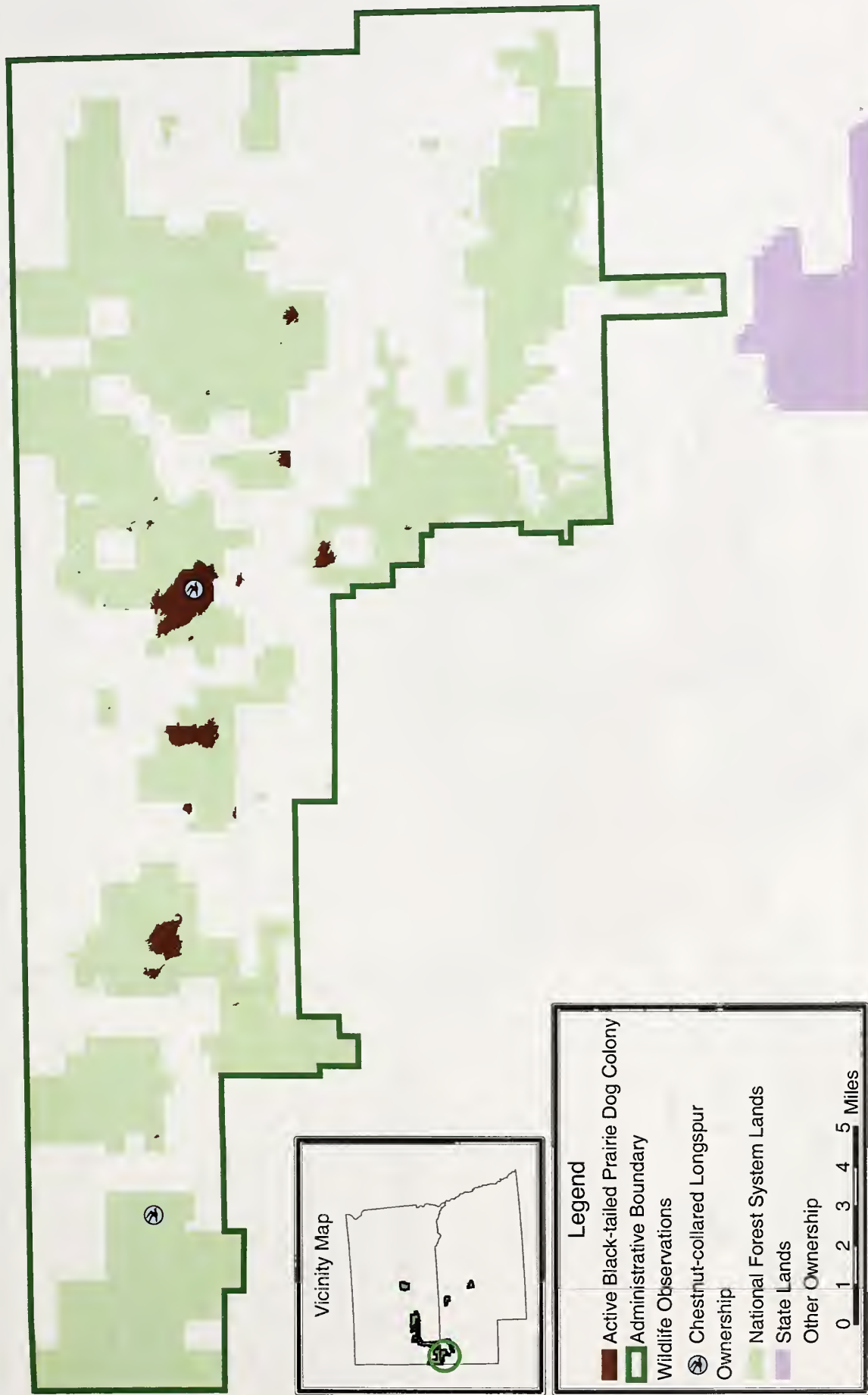








# Chestnut Collared Longspur Observations Oglala National Grassland



Vicinity Map

## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Chestnut-collared Longspur Ownership
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles





# Short-Eared Owl Observations East Half Buffalo Gap National Grassland

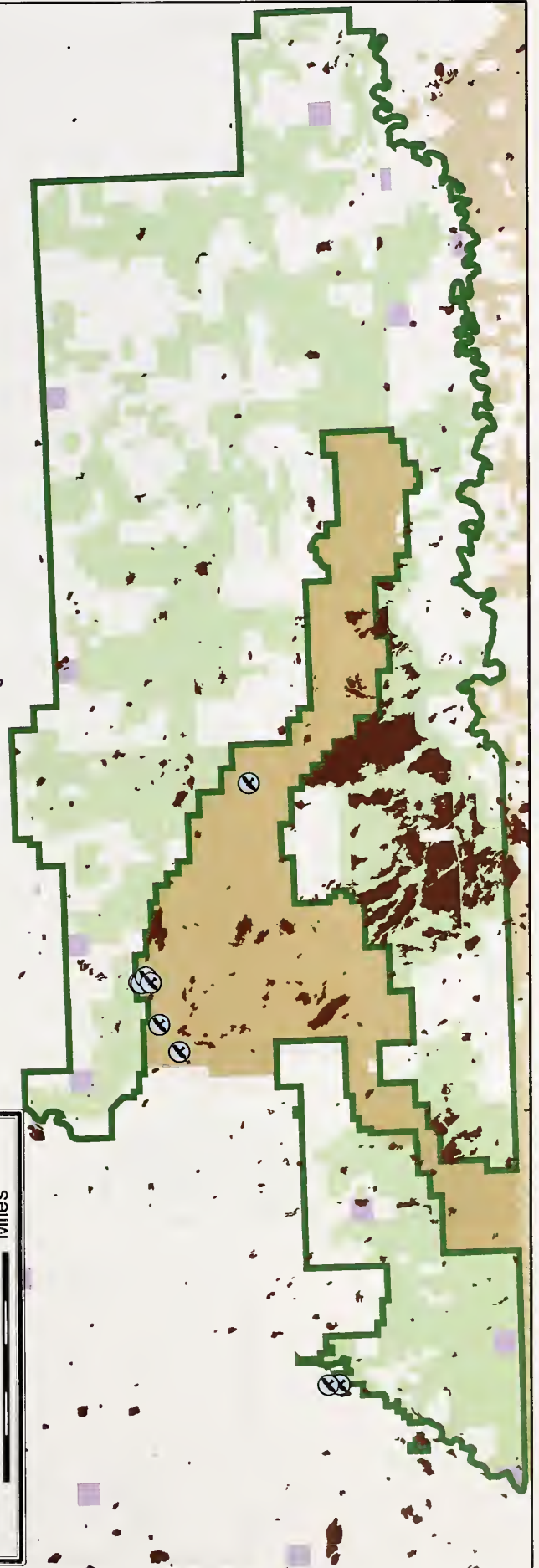


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Short-eared Owl
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map







# Short-Eared Owl Observations West Half Buffalo Gap National Grassland

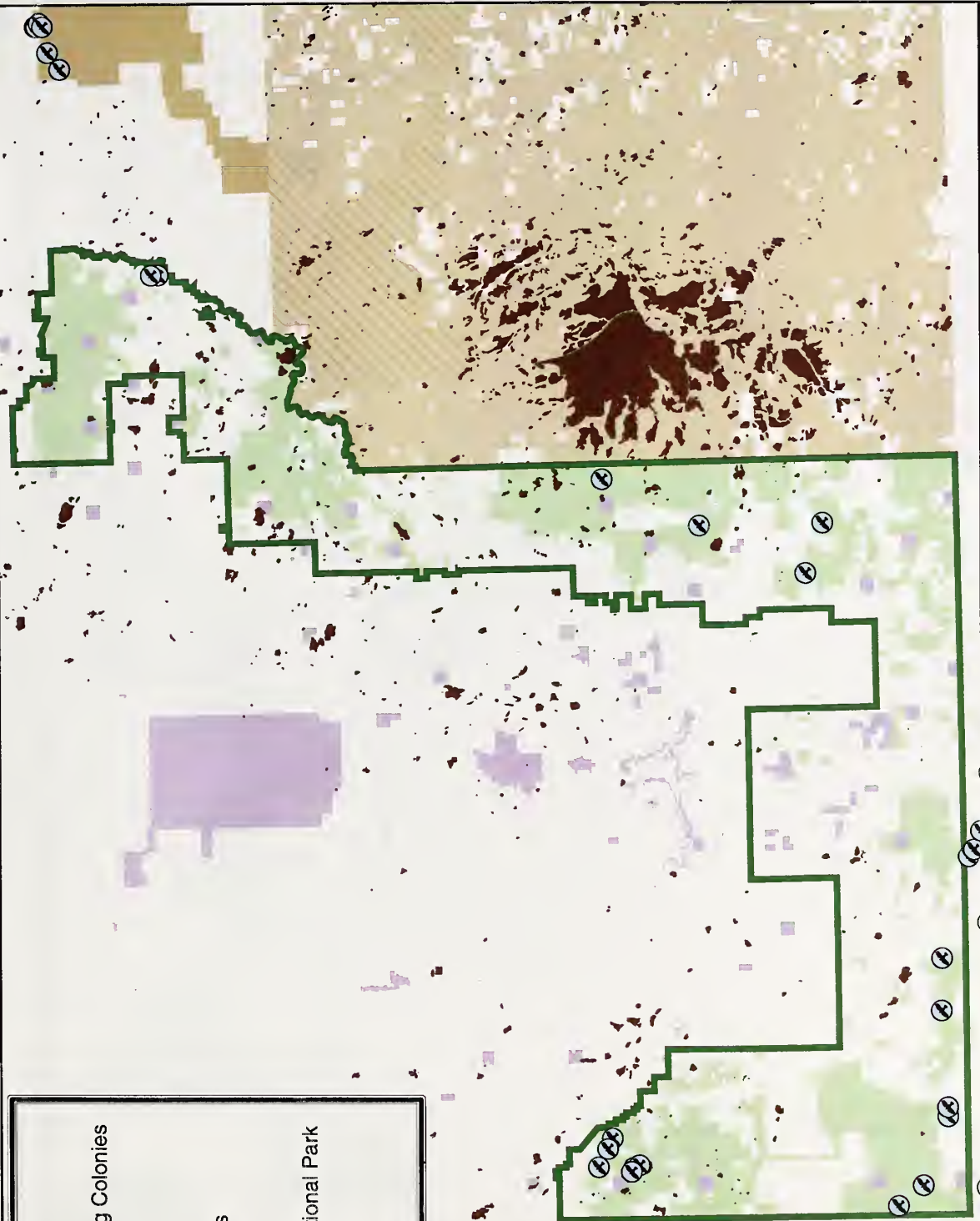
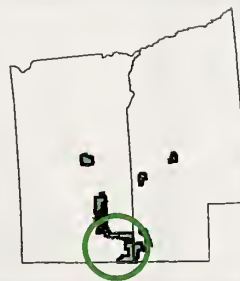


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Short-eared Owl
- Owenship
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map

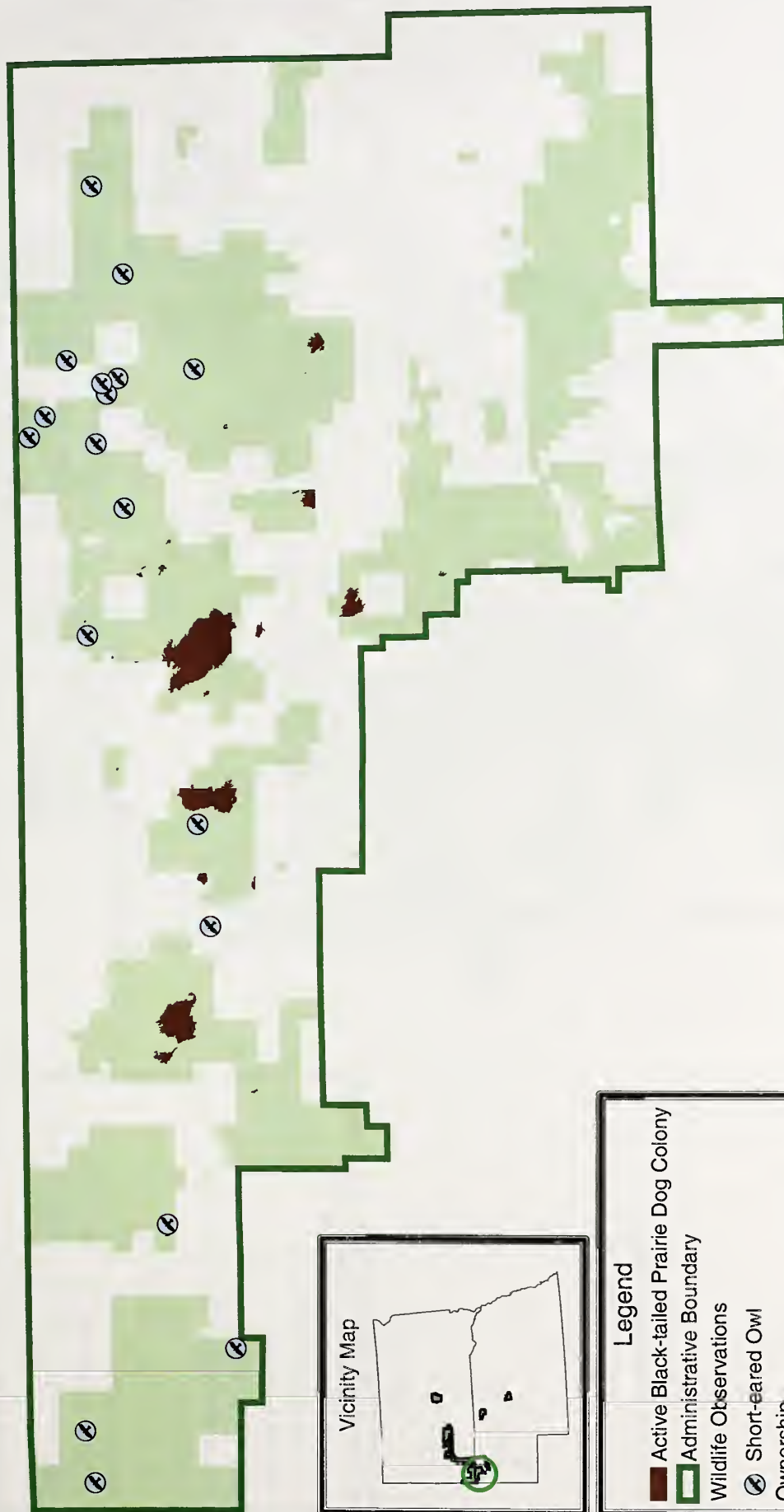








# Short-Eared Owl Observations Oglala National Grassland



Vicinity Map

## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Short-eared Owl Ownership
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles





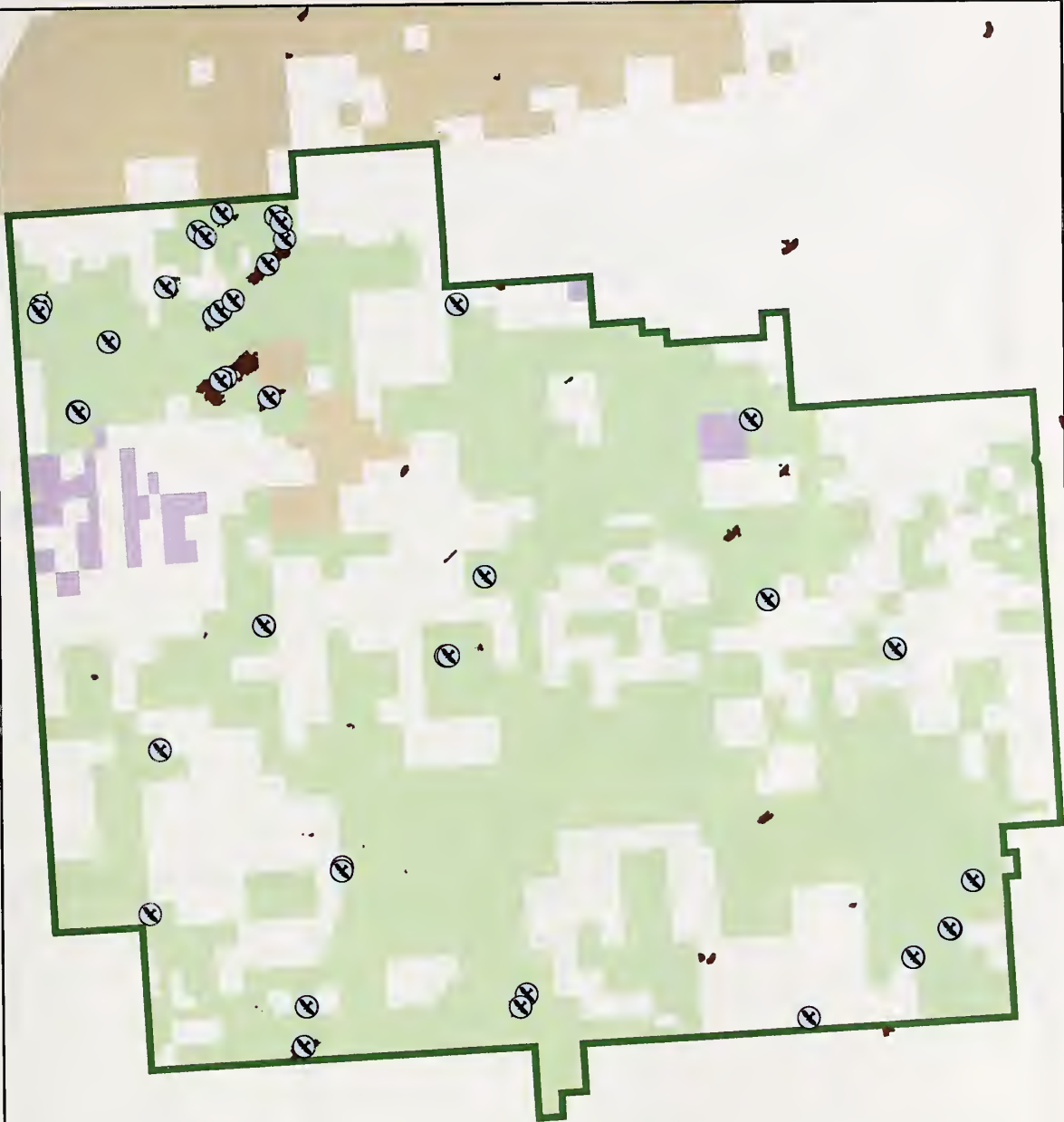


# Western Burrowing Owl Observations Fort Pierre National Grassland



- Legend**
- Active Black-tailed Prairie Dog Colony
  - Administrative Boundary
  - Wildlife Observations
  - Western Burrowing Owl
  - Ownership
  - National Forest System Lands
  - Tribal Lands
  - State Lands
  - Other Ownership
- 0 1 2 3 4 5 Miles

Vicinity Map





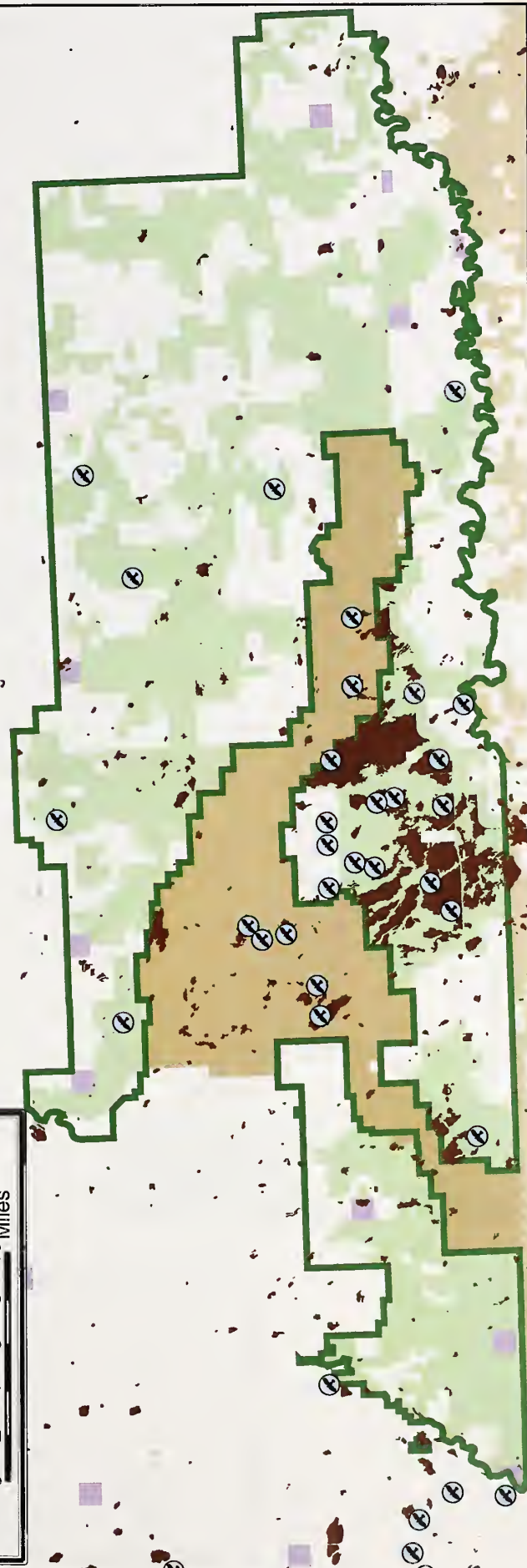
# Western Burrowing Owl Observations East Half Buffalo Gap National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Western Burrowing Owl
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles







# Western Burrowing Owl Observations West Half Buffalo Gap National Grassland



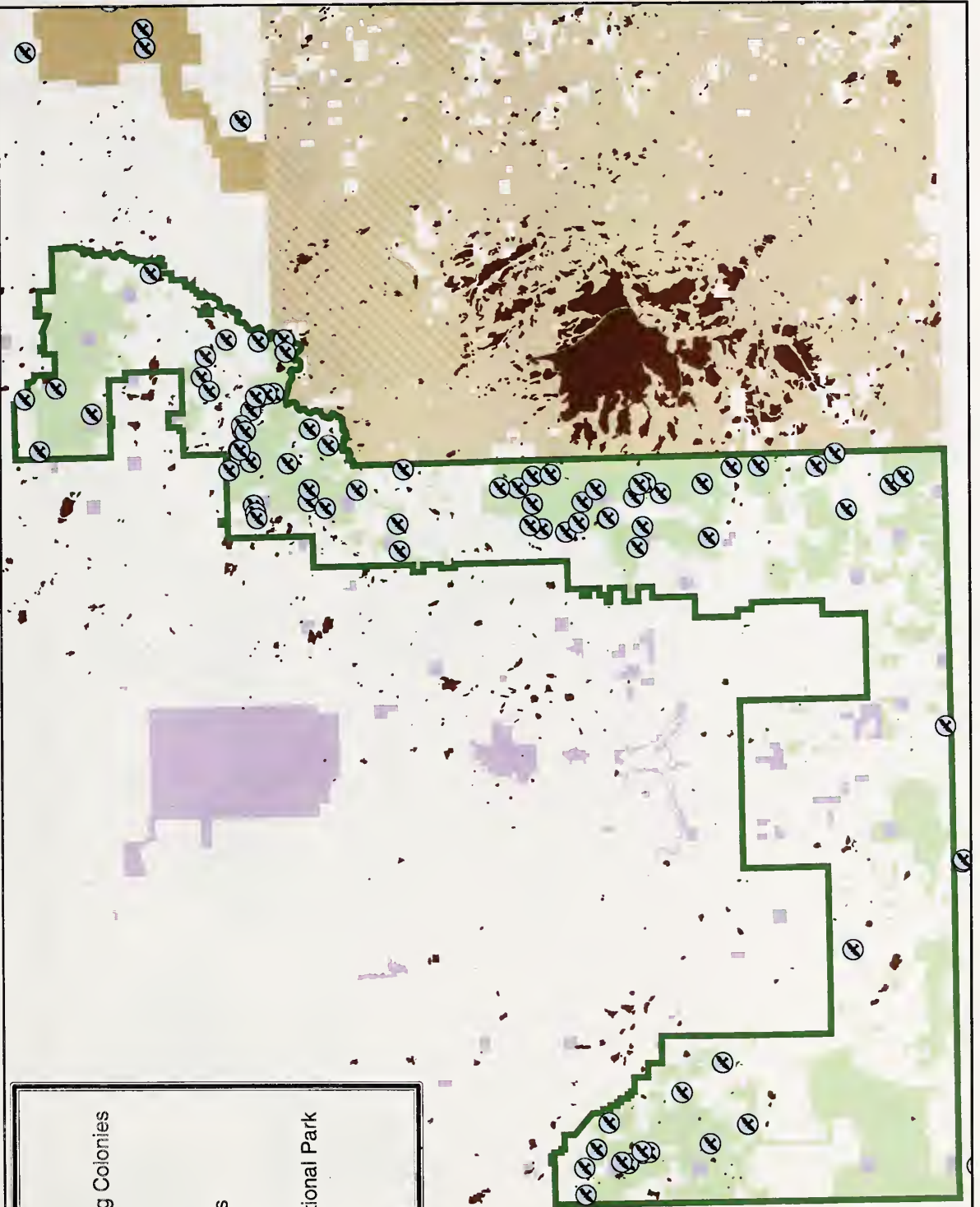
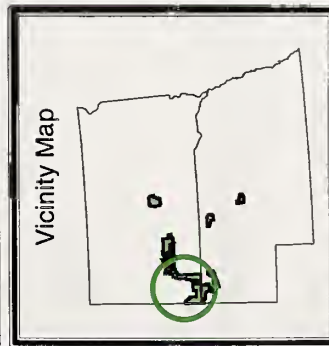
**Legend**

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Western Burrowing Owl

**Ownership**

- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

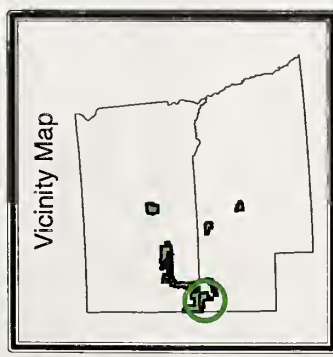
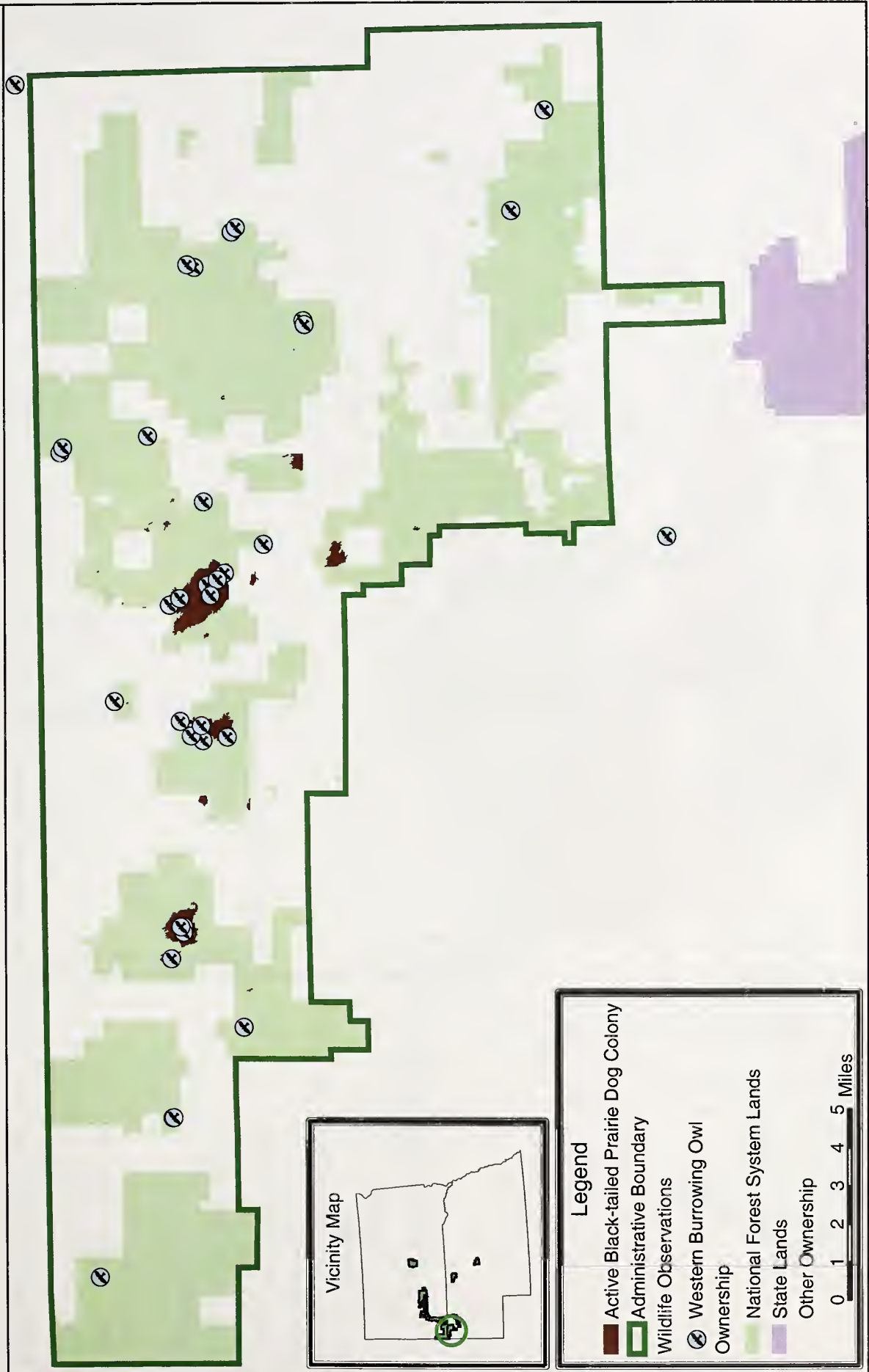
0 2 4 6 8 10 Miles







# Western Burrowing Owl Observations Oglala National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Western Burrowing Owl Ownership
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles





# Mountain Plover Observations East Half Buffalo Gap National Grassland

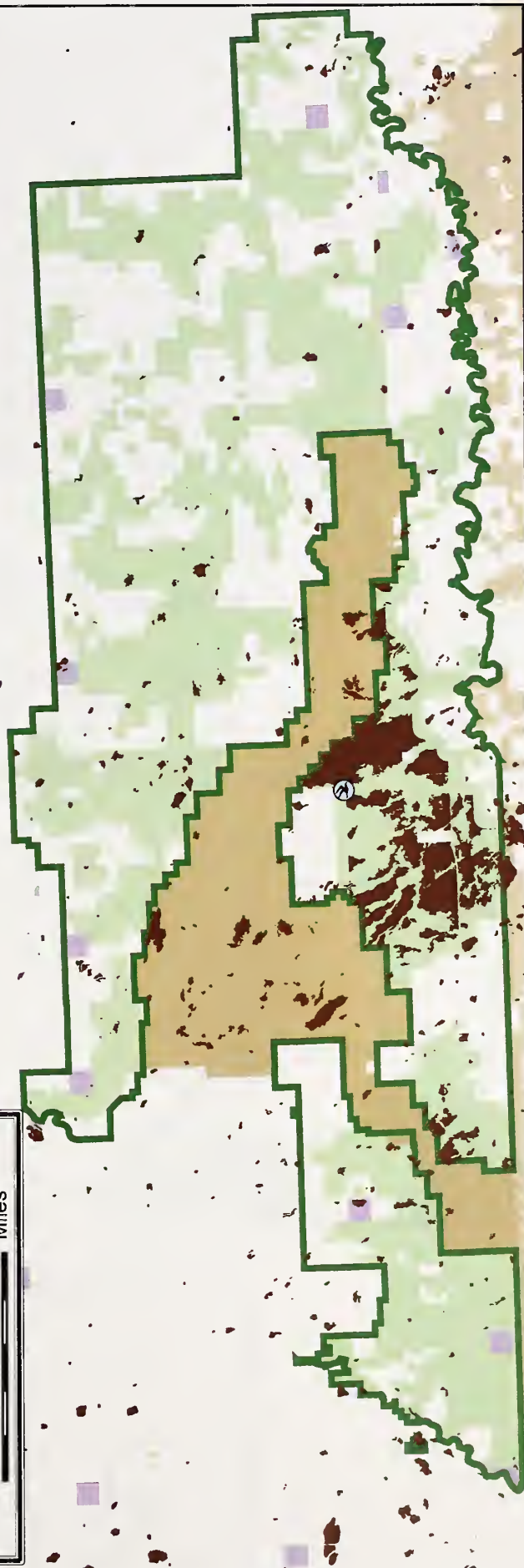
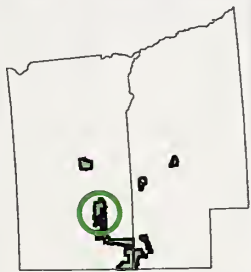


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Mountain Plover
- Ownership
  - Bureau of Reclamation
  - National Forest System Lands
  - Badlands National Park
  - Tribal Lands
  - Tribal Lands managed by National Park
  - State Lands
  - Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map









# Brewers Sparrow Observations West Half Buffalo Gap National Grassland

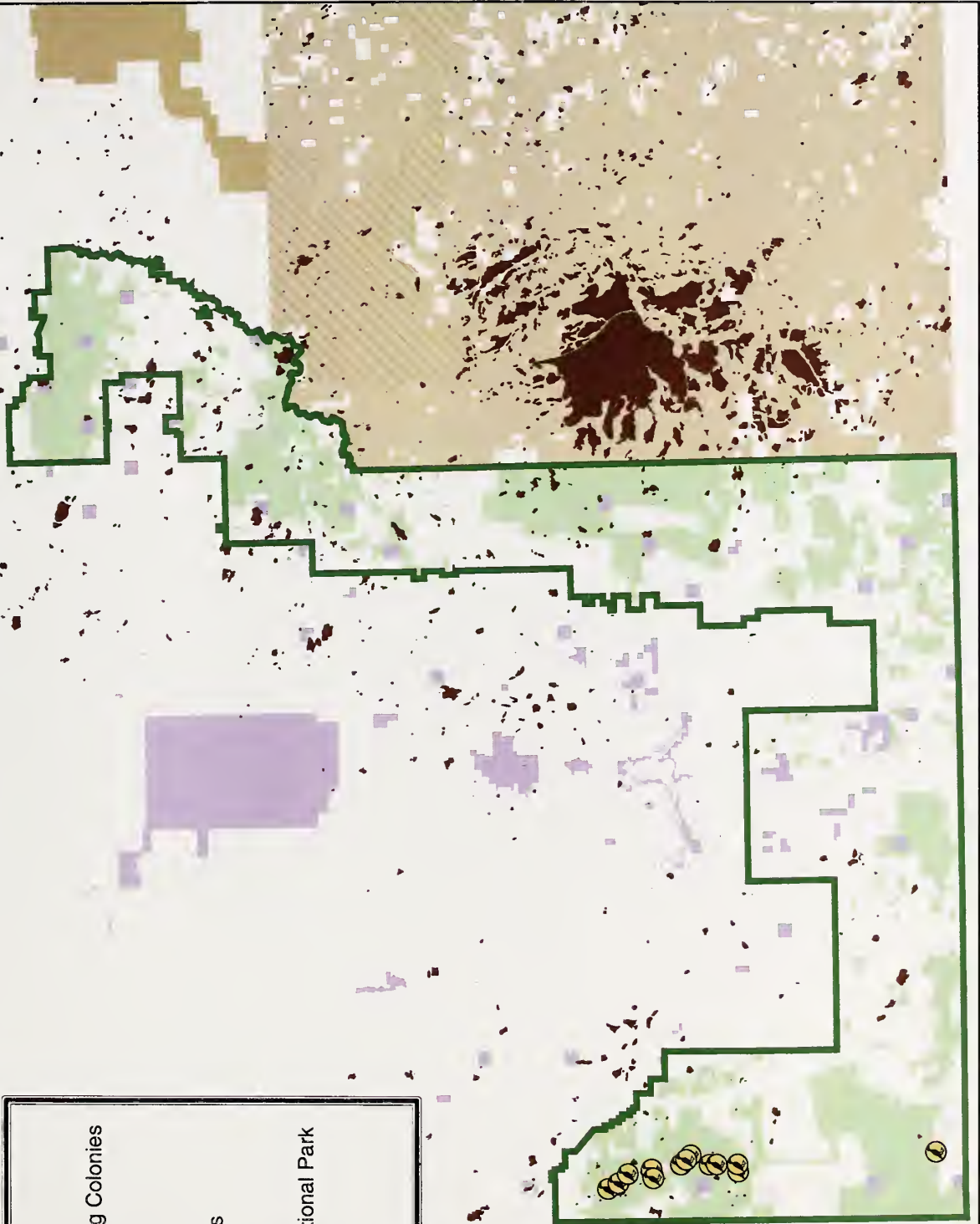


## Legend

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Brewer's Sparrow
- Ownership**
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map









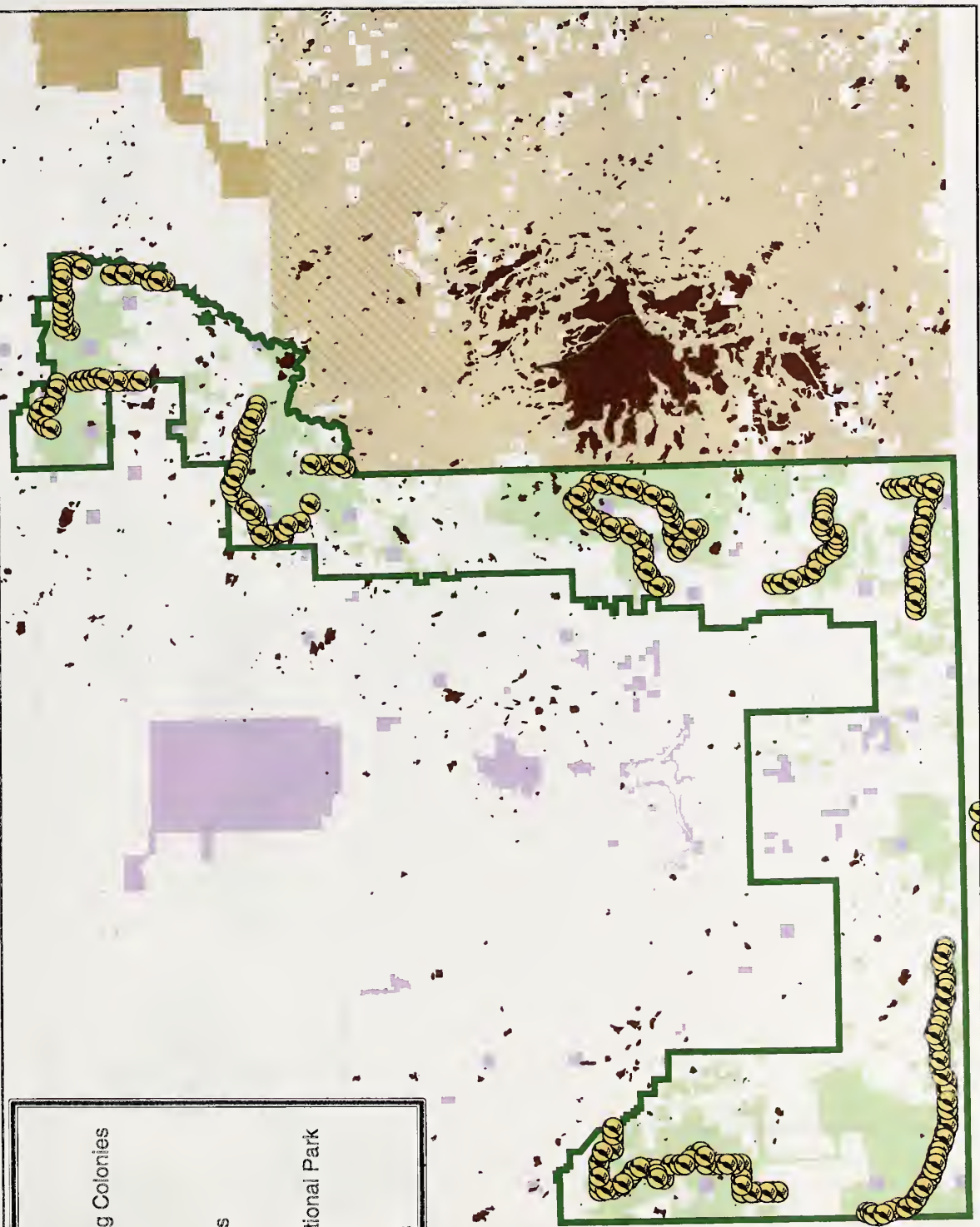
# Grasshopper Sparrow Observations West Half Buffalo Gap National Grassland



**Legend**

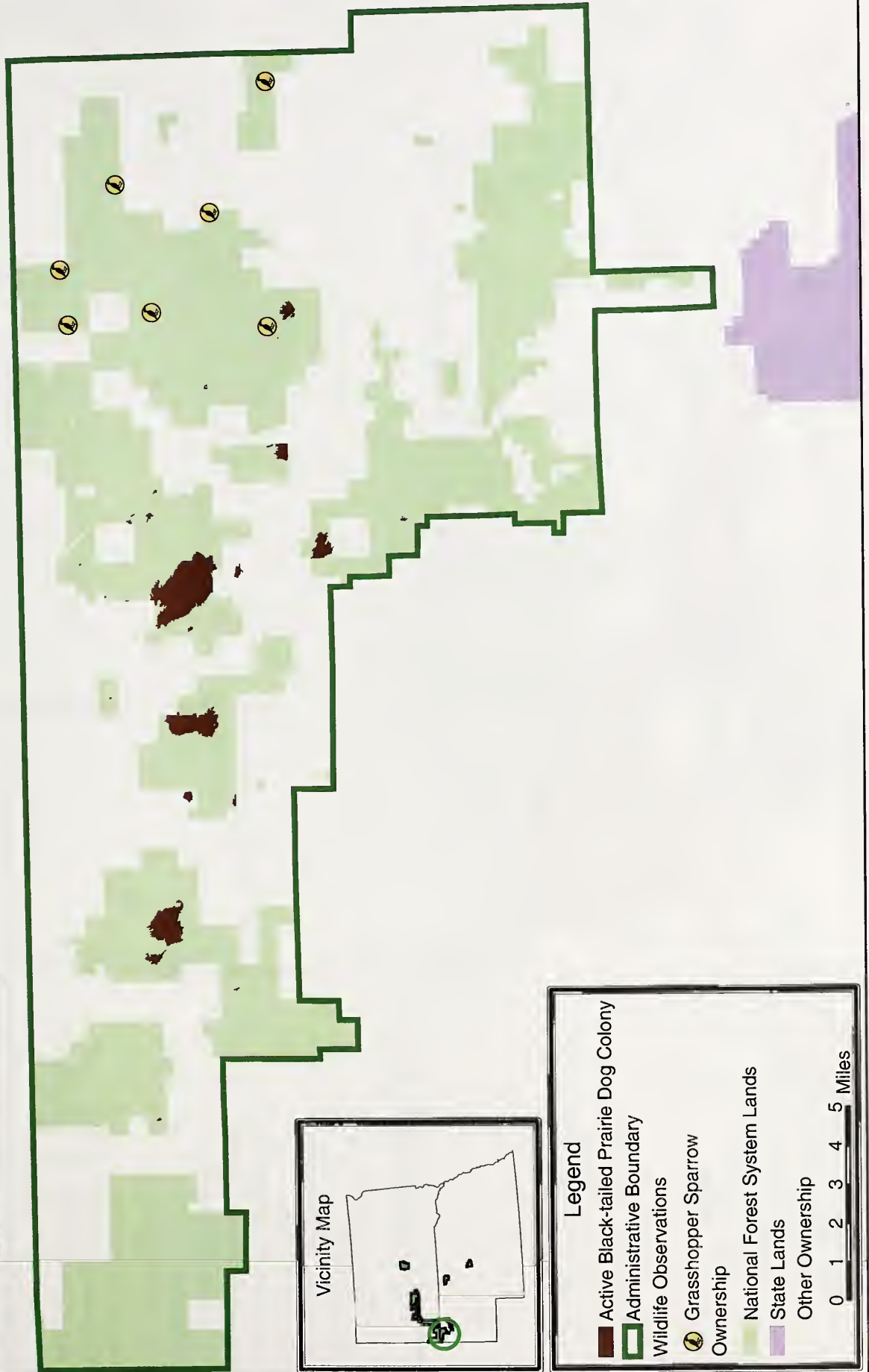
- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Grasshopper Sparrow
- Ownership**
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles





# Grasshopper Sparrow Observations Oglala National Grassland



**Legend**

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Grasshopper Sparrow Ownership
- National Forest System Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles







# Trumpeter Swan Observations East Half Buffalo Gap National Grassland

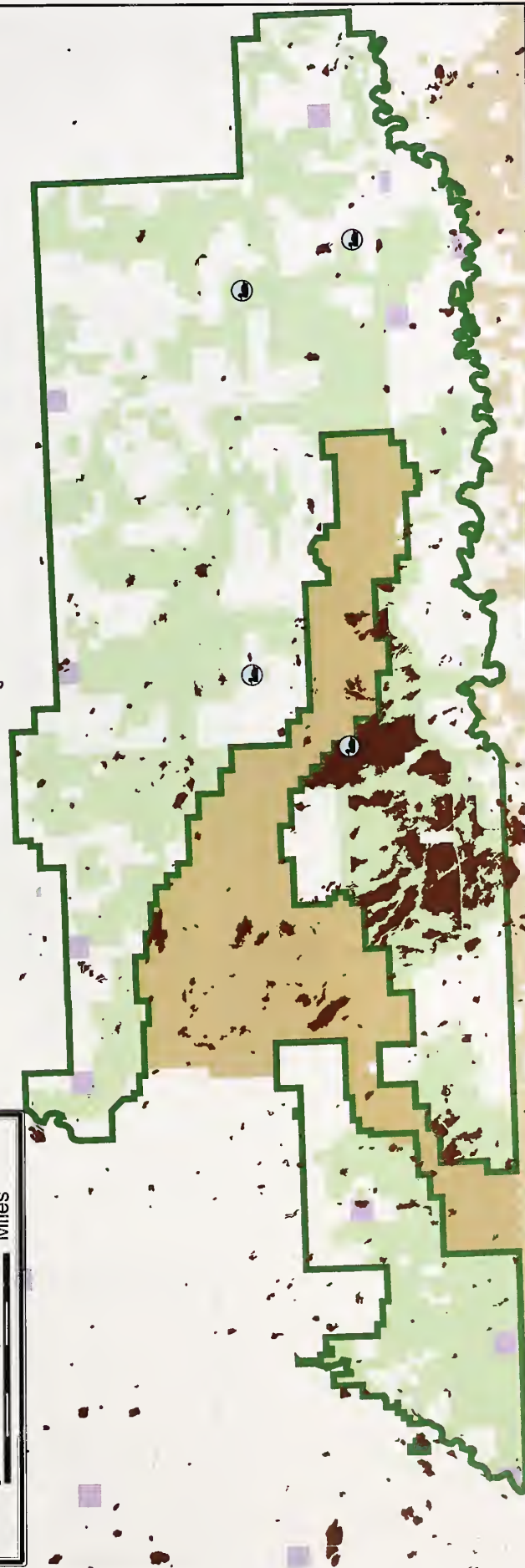


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Trumpeter Swan
- Ownership
- Bureau of Reclamation
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles

## Vicinity Map







# Regal Fritillary Butterfly Observations Fort Pierre National Grassland

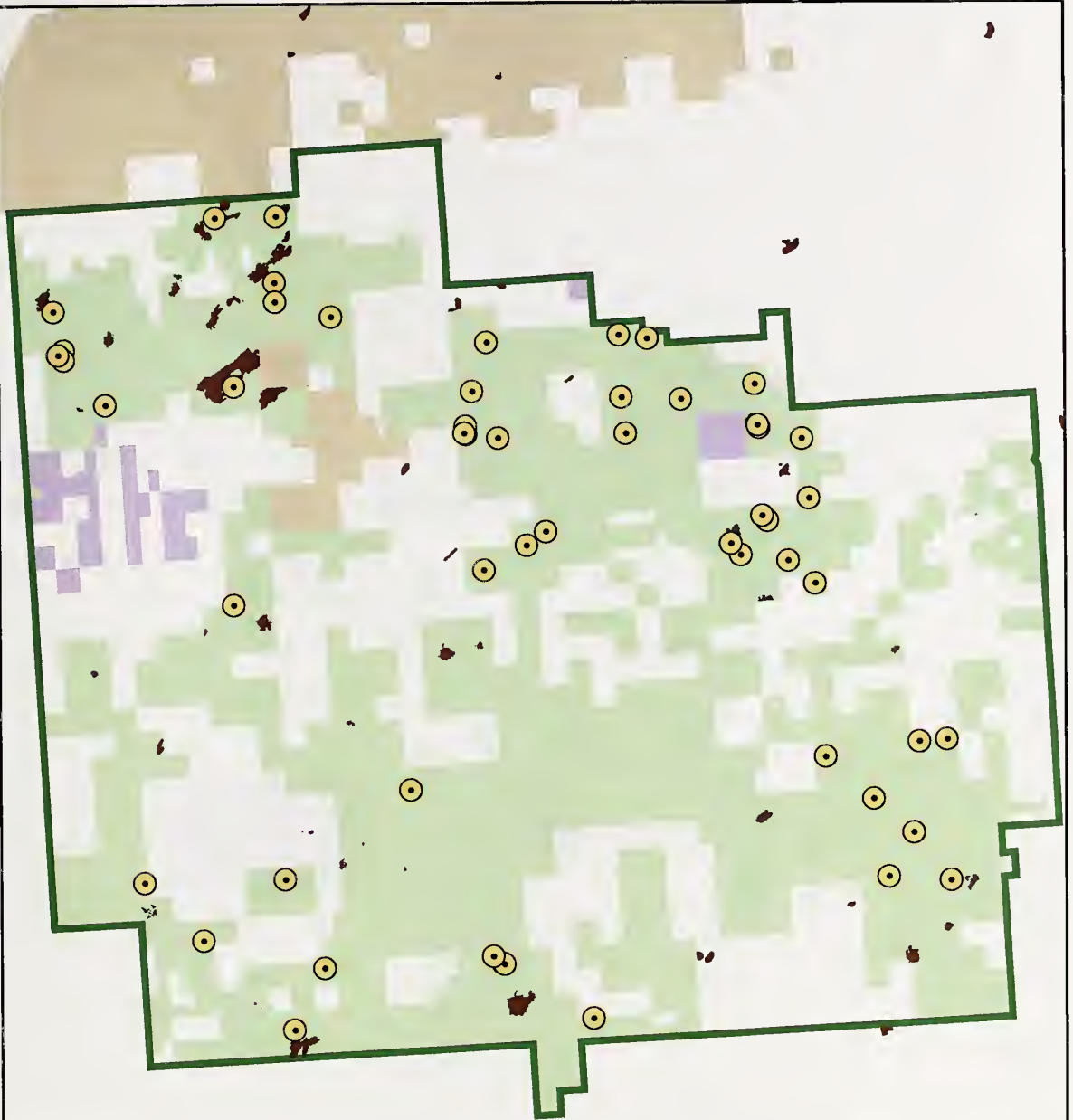


## Legend

- Active Black-tailed Prairie Dog Colony
- Administrative Boundary
- Wildlife Observations
- Regal Fritillary
- Ownership
- National Forest System Lands
- Tribal Lands
- State Lands
- Other Ownership

0 1 2 3 4 5 Miles

## Vicinity Map





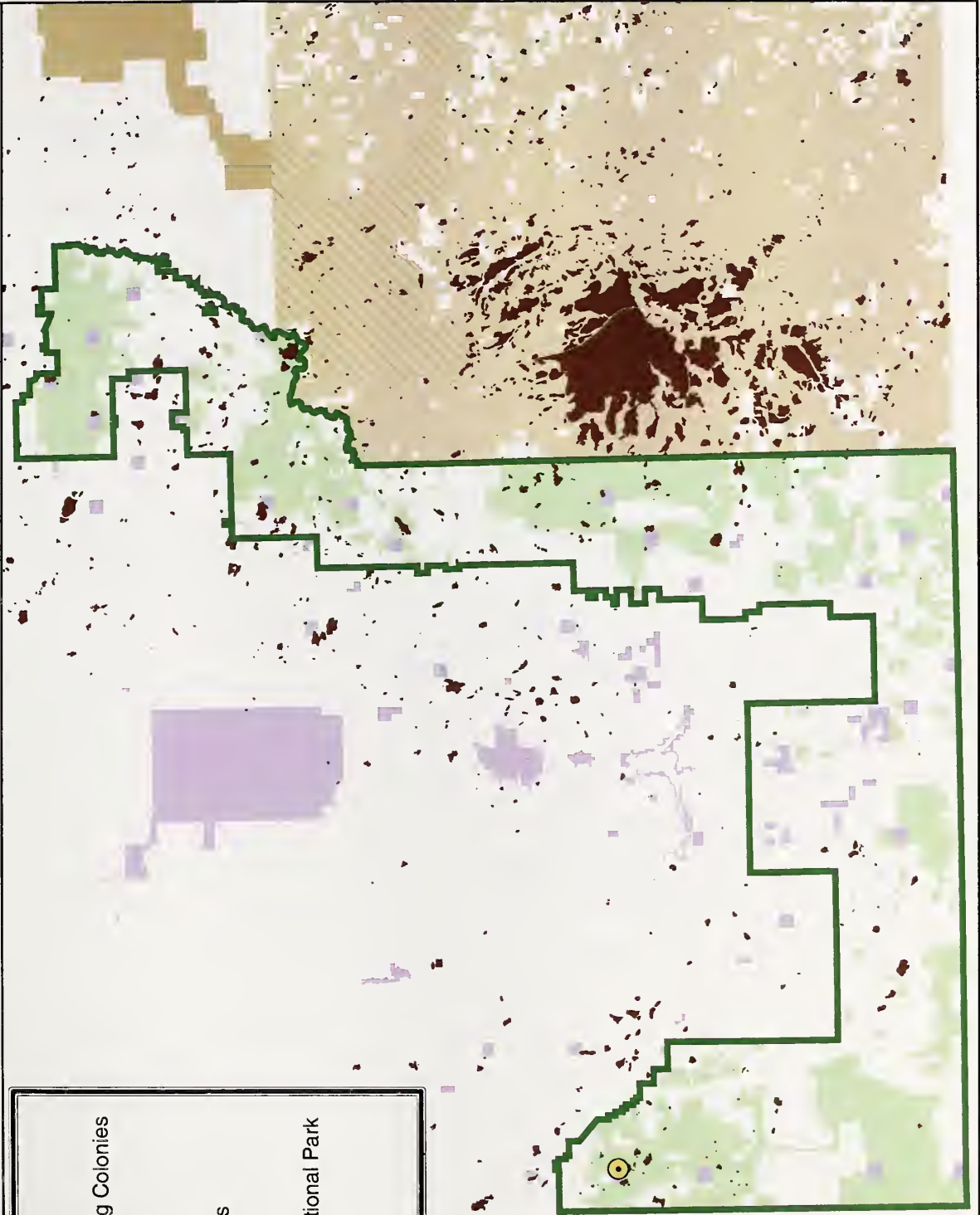
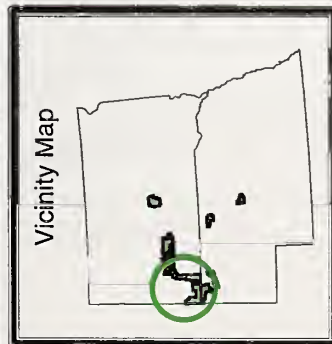
# Regal Fritillary Butterfly Observations West Half Buffalo Gap National Grassland



**Legend**

- Administrative Boundary
- Active Black-tailed Prairie Dog Colonies
- Wildlife Observations
- Regal Fritillary
- Owenship
- National Forest System Lands
- Badlands National Park
- Tribal Lands
- Tribal Lands managed by National Park
- State Lands
- Other Ownership

0 2 4 6 8 10 Miles







# APPENDIX F

## Common and Scientific Names

Common Name	Species
American bittern	<i>Botaurus lentiginosus</i>
American burying beetle	<i>Nicrophorus americanus</i>
American peregrine falcon	<i>Falco peregrinus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Barr orphaca (Barr's milkvetch)	<i>Astragalus barrii</i>
Black tern	<i>Chlidonias niger</i>
Black-footed ferret	<i>Mustela nigripes</i>
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>
Blowout Penstemon	<i>Penstemon hydenii</i>
Blue grama	<i>Bouteloua gracilis</i>
Brewer's sparrow	<i>Spizella breweri</i>
Buffalograss	<i>Buchloe dactyloides</i>
Chestnut-collared longspur	<i>Calcarius ornatus</i>
Ferruginous hawk	<i>Buteo regalis</i>
Finescale dace	<i>Phoxinus neogaeus</i>
Fringed myotis	<i>Myotis thysanodes</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Greater prairie-chicken	<i>Tympanuchus cupido</i>
Greater sage-grouse	<i>Centrocercus urophasianus</i>
Ord's Kangaroo rat	<i>Dipodomys ordii</i>
Hall's bulrush	<i>Schoenoplectus hallii</i>
Lesser bladderwort	<i>Utricularia minor</i>
Lesser panicled sedge	<i>Carex diandra</i>
Lesser yellow lady's slipper	<i>Cypripedium parviflorum</i>
Lewis's woodpecker	<i>Melanerpes lewis</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Long-billed curlew	<i>Numenius americanus</i>
McCown's Longspur	<i>Calcarius mccownii</i>
Mountain plover	<i>Charadrius montanus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Northern harrier	<i>Circus cyaneus</i>
Northern leopard frog	<i>Rana pipiens</i>
Pearl dace	<i>Margariscus margarita</i>
Pocket mouse	<i>Perognathus spp.</i>
Plains leopard frog	<i>Rana blairi</i>
Plains minnow	<i>Hybognathus placitus</i>

Common Name	Species
Plains sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
Regal fritillary	<i>Speyeria idalia</i>
Short-eared owl	<i>Asio flammeus</i>
Slender cottongrass	<i>Eriophorum gracile</i>
Spinulose woodfern	<i>Dryopteris carthusiana</i>
Sturgeon chub	<i>Macrhybopsis gelida</i>
Swift fox	<i>Vulpes velox</i>
Townsend's Big-eared bat	<i>Plecotus townsendii</i>
Trumpeter swan	<i>Cygnus buccinator</i>
Visher's eriogonum (Dakota buckwheat)	<i>Eriogonum visherii</i>
Western burrowing owl	<i>Athene cunicularia</i>
Western wheatgrass	<i>Agropyron smithii</i>
Whooping crane	<i>Grus americana</i>
Yellow widelip orchid	<i>Liparis loeselii</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Deer mice	<i>Peromyscus maniculatus</i>
Ants	<i>Hymenopteras</i> spp.
Darkling beetles	<i>Coleptera</i> spp.
Green needlegrass	<i>Stipa viridula</i>
Sagebrush	<i>Artemisia</i> spp.
Western snowberry	<i>Symphoricarpos occidentalis</i>
Rabbits	<i>Lepus</i> spp.
Ground squirrels	<i>Spermophilus</i> spp.
Voies	<i>Microtis</i> spp.
Rhichardson's ground squirrel	<i>Spermophilus richardsonii</i>
Bison	<i>Bison bison</i>
Big sagebrush	<i>Artemisia tridentate</i>
Violets	<i>Viola</i> spp.
Nuttall violet	<i>Viola nuttallii</i>
Long-headed coneflower	<i>Ratibida columnifera</i>
Purple coneflower	<i>Echinacera pallida</i> or <i>A. angustifolia</i>
Fleabanes	<i>Erigeron</i> spp.
Black-eyed susans	<i>Rudbeckia</i> spp.
Gaillardias	<i>Gaillardia</i> spp.
Milkweeds	<i>Asclepias</i> spp.
Thistles	<i>Cirsium</i> spp.
Bergamots	<i>Monarda</i> spp.
Blazing stars	<i>Liatris</i> spp.



# APPENDIX G

## GLOSSARY

**Active Prairie Dog Colony** - A prairie dog colony that supports a prairie dog density that has not been noticeably reduced by poisoning, plague, or shooting and that is essentially at its carrying capacity.

**Activity** - A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and rangeland outputs or achieve administrative or environmental quality objectives.

**Adaptive Management** - A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management involves testing, monitoring, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify management policy.

**Administrative Unit** - All the National Forest System lands, including national grasslands, for which one forest supervisor is responsible.

**Adverse Determination** - Please refer to the definition as found in the Biological Assessment and Evaluation appendix.

**Adverse Effect (Heritage Resources)** - Any effect on a heritage resource that would be considered harmful to those characteristics that qualify the property for inclusion in the National Register of Historic Places.

**Affected Environment** - The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.

**Air Pollution** - Any substance or energy (heat, light, noise, etc.) that alters the state of the air from what would naturally occur.

**Airshed** - A geographical area, which, because of topography, meteorology, and climate, routinely shares the same air mass.

**Alternative** - A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of several policies, plans, or projects proposed for decision-making. An alternative need not substitute for another in all respects.

**American Indian** - A member of any tribe, band, nation, or other organized group or community of Indians recognized by the United States.

**Animal Unit Month (AUM)** - The amount of feed or forage required by an animal-unit for one month.

**Annual Plant** - A plant that completes its life cycle and dies in one year or less.

**Archeological Resource** - Any physical remains of past human life or activities.

**Availability (Oil and Gas)** - Availability of National Forest System lands, including national grasslands, for oil and gas leasing. Availability refers to lands that have not been formally prohibited from oil and gas leasing activities.

**Available Forage** - That portion of the forage production that is accessible for use by a specified kind or class of grazing animal.

**Available Lands (Oil and Gas)** - Any lands subject to oil and gas leasing under the Minerals Leasing Act.

**Biological Diversity** - The full variety of life in an area, including the ecosystems, plant and animal communities, species and genes, and the processes through which individual organisms interact with one another and their environments. Emphasis is on the diversity of native or endemic species.

**Boundary Management Zone** - Designated area on national grasslands where one or more management tools are applied to help reduce unwanted prairie dog colonization of adjoining private or tribal agricultural lands. These areas extend into national grasslands specified distances from property boundaries.

**Candidate Species** - Species for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list the species for protection under the Endangered Species Act.

**CFR** - Code of Federal Regulations.

**Community (Biological)** - Any assembly of organisms living together.

**Community (Social)** - The people who reside in one locality and are subject to the same laws or who have common interests, etc.

**Community Lifestyle** - The ways in which residents conduct their everyday routines and how those routines are associated with the national forests or national grasslands.

**Community Stability** - The capacity of community to absorb and cope with change without major hardship to institutions or groups within the community.

**Conservation** - The aggregate of practices and customs to perpetuate sustained yield of renewable resources and prevent waste of nonrenewable resources.

**Consultation** - 1) An active, affirmative process that (a) identifies issues and seeks input from appropriate American Indian governments, community groups, and individuals and (b) considers their interests as a necessary and integral part of the BLM and Forest Service decision-making process. 2) The legal obligation requiring the federal government, through consultation, to consider the interests of American Indian tribes and account for those interests in the decision-making process. This legal obligation is based in laws and numerous Executive Orders and statutes. 3) A process that involves discussions between a federal agency and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service under Section 7(a)(2) of the Endangered Species Act of 1973, as amended, regarding potential impacts on a species or critical habitat listed under Section 4 of the act.

**Cool-Season Plant** - A plant that generally makes the major portion of its growth during the late fall, winter, and early spring. Cool-season species generally exhibit the C3 photosynthetic pathway.

**Cooperating Agency** - Any federal agency other than the lead agency that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment.

**Cost** - The negative or adverse effects or expenditures resulting from an action. Costs may be monetary, social, physical, or environmental in nature.

**Council on Environmental Quality (CEQ)** - An advisory council to the President established by the National Environmental Policy Act of 1969.

**Critical Habitat (Threatened, Endangered, and Proposed Species)** - Habitat of federally listed threatened or endangered species where those physical and biological features essential to conservation of the species are found and which may require special management considerations or protection. This habitat may currently be occupied or may be determined by the Secretary of the interior to be essential for areas outside the species' current range.

**Cropland** - Land primarily used for the production of cultivated crops.

**Cultural Resources** - See Heritage Resources.

**Culture** - That complex whole that includes knowledge, belief, art, morals, customs, and any other capabilities and habitats peculiar to a society.

**Cumulative Effect** - The impact on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of the source (federal or nonfederal agencies, individuals). Cumulative effects can result from individually minor but collectively significant actions taking place over time.

**Decision Document** - Document that provide the criteria and information used in the formulation and evaluation of alternatives and the preferred alternative.

**Direct Effect** - Environmental effect caused by an action and that occur at the same time and place.

**District Ranger** - The official responsible for administering the National Forest System lands, including national grasslands, on a ranger district.

**Disturbance** - A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

**Diversity** - Diversity refers to the distribution and abundance of different plant and animal communities and species within the area covered by land and resource management plans. This term is derived from the National Forest Management Act (NFMA). This term is not synonymous with biological diversity.

**Draft Environmental Impact Statement (DEIS)** - The statement of environmental effects required for major federal actions under Section 102 of the National Environmental Policy Act and released to the public and other agencies for comment and review.

**Drought** - Any year or sequence of years when annual precipitation amounts are less than 75% below average.

**Effect** - Physical, biological, social, and economic result (expected or experienced) resulting from achievement of outputs. Effects can be direct, indirect, and cumulative.



**Effect (Heritage Resources)** - Impact to the characteristics that qualify a heritage resource for the National Register of Historic Places. These can include alterations in location, setting, use design, materials, feeling, and association. Adverse effects include:

- Physical destruction or damage.
- Isolation from or alteration of setting.
- Introduction of visual, audible, or atmospheric elements.
- Physical deterioration from neglect or from any action.
- Transfer, lease, or sale.

**Eligible (Heritage Resources)** - Indicates that a specific heritage resource qualifies for or is already listed in the National Register of Historic Places.

**Endangered Species** - Any species of animal or plant in danger of extinction throughout all or a significant portion of its range and so designated by the Secretary of Interior in accordance with the 1973 Endangered Species Act.

**Endangered Species Act of 1973** - An act to conserve ecosystems for endangered species and threatened species, to conserve the endangered species and threatened species themselves, and to take appropriate steps to achieve the purposes of the (relevant) treaties and conventions.

**Environment** - All the conditions, circumstances, and influences surrounding and affecting the development of an organism or group of organisms.

**Environmental Analysis** - An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions.

**Environmental Impact Statement (EIS)** - A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A federal statute (Section 102 of the National Environmental Policy Act of 1969) requires that such statements be prepared. An EIS is prepared first in draft or review form and then in a final form and includes the following points:

- The environmental impact of the proposed action.
- Any adverse impacts that cannot be avoided by the action.
- The alternative courses of action.
- The relationship between local short-term use of the human environment and the maintenance and enhancement of long-term productivity.
- A description of the irreversible and irretrievable commitment of resources which would occur if the action was accomplished.

**Erosion** - The wearing away of the land surface by running water, wind, ice, gravity, or other geological activities.

**Executive Order** - An order or regulation issued by the President or some administrative authority under presidential direction.

**Experimental Population Area** - Area designated through a federal rule-making process for release of a federally-listed species under provisions of Section 10(j) of Endangered Species Act.

**Extinction** - Disappearance of a taxon of organisms from existence in all regions.

**Extirpation** - The elimination of a species from a particular area.

**Forage** - Vegetation used for food by wildlife and livestock, particularly ungulate wildlife and domestic livestock.

**Forage Production** - The weight of forage that is produced within a designated period of time on a given area. The weight may be expressed as green, air dry, or oven dry. The term may also be modified as to time of production such as annual, current year, or seasonal forage production.

**Forb** - Any herbaceous plant other than those in the grass, sedge, and rush families. For example, any non grass-like plant that has little or no woody material.

**Forest Supervisor** - Official responsible for administering any particular national forest. Forest supervisors report to regional foresters.

**Fossil** - The remains or traces of an organism or assemblage of organisms that have been preserved by natural processes in the Earth's crust. Minerals, such as oil and gas, coal, oil shale, bitumen, lignite, asphaltum and tar sands, phosphate, limestone, diatomaceous earth, uranium, and vanadium, while they may be of biologic origin, are not here considered fossils. Fossils of scientific value may occur within or in association with such minerals.

**FSH** - Forest Service Handbook

**FSM** - Forest Service Manual

**Geographic Area** - A piece of land where management is directed toward achieving a specified desired condition.

**Geographic Information System (GIS)** - A spatial type of information management system that provides for the entry, storage, manipulation, retrieval, and display of spatially oriented data.

**Goal** - A concise statement that describes a desired condition to be achieved sometime in the future. A goal is normally expressed in broad, general terms that are timeless in that there is no specific date by which the goal is to be achieved (36 CFR 219.3). The Region 2 Desk Guide has this to say about goals: "Desired conditions and processes are measurable, have a timeless nature, and describe a resource condition or ecological process. In the first round of (land and resource management) planning, these statements were often termed 'goals.' They describe the conditions or processes we expect to achieve through resource management. Complete accomplishment of desired conditions is not mandatory during the current planning phase, but it is our ultimate intent."

**Grassland** - Any land on which the dominant plants are grasses or on which grasses originally dominated.

**Grazing** - The act of animals consuming plants on range or pasture.

**Guideline** - Advisable actions that should be followed to achieve grassland or forest goals and objectives. Deviations from guidelines must be analyzed during project-level analysis and be documented in a project decision document but do not require management plan amendments.

**Habitat** - The sum total of environmental conditions of a specific place occupied by a wildlife species or a population of such species.

**Habitat Suitability** - A measure of current habitat quality relative to the local biological

potential of an area to provide habitat for a species. Habitat suitability is usually expressed as low, moderate or high or is quantitatively presented as an index value scaled from 0 (unsuitable) to 1.0 (optimum habitat).

**Herbivore** - An animal that subsists principally or entirely on plants or plant material.

**Heritage Resources** - The physical remains and conceptual content or context of an area. Physical remains may include artifacts, structures, landscape modifications, rock art, trails, or roads. Conceptual content/context includes the setting for legendary, historic, or prehistoric events, such as a sacred area for American Indians.

**Human Environment** - Includes the natural and physical environment and the relationship of people within that environment.

**Implementation** - Those activities necessary to initiate the actions in the approved land and resource management plan.

**Inactive Prairie Dog Colony** - A prairie dog colony that no longer supports a prairie dog population due to poisoning or plague; however, the colony area still retains its intact burrow system.

**Indirect Effect** - Environmental effect caused by an action but resulting later in time or farther away in place, yet which are still reasonably foreseeable.

**In-holding** - Land within boundaries of a national forest or national grassland that are owned by some other agency, organization, or individual.

**Interdisciplinary Team (ID Team)** - A group of people with different specialized training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem.

**Irretrievable Commitment** - Applies to loss of production or use of renewable natural resources for a period of time. For example, road construction leads to an irretrievable loss of the productivity of the land under which the road is located. If the road is later obliterated, the land may eventually become productive again. The production lost is irretrievable, but the action is not irreversible.

**Irreversible Commitment** - Decision causing changes that cannot be reversed. For example, if an area is mined, that area cannot, at a later date, be allocated to some other resource activities, such as Wilderness. Once mined, the ability of that area to meet Wilderness criteria, for instance, has been irreversibly lost. Irreversible commitments often apply to some non-renewable resource, such as minerals and heritage resources.

**Land and Resource Management Plan (LRMP)** - A document that guides natural resource management and establishes standards and guidelines for a national forest or national grassland. Required by the National Forest Management Act.

**Land Exchange** - The conveyance of nonfederal land or interests to the United States in exchange for National Forest System land, including national grasslands, or interests in such land.

**Landowner** - Person who has title to land recognized by the prevailing legal system.



**Landscape** - The landforms of a region in aggregate.

**Lead Agency** - The agency or agencies preparing or having taken the primary responsibility for preparing an environmental impact statement.

**Lease (Oil and Gas)** - A legal contract granting the right to explore for, develop, and produce oil and gas resources for a specific period of time under certain agreed-upon terms and conditions.

**Lease Stipulations (Oil and Gas)** - Additional specific terms and conditions that modify the lease rights or change the manner in which an operation may be conducted.

**Listed Species** - Any species of fish, wildlife, or plant officially designated as endangered or threatened by the Secretary of the Interior or Commerce.

**Livestock** - Domestic animals.

**Major Federal Action** - Includes actions with effects that may be major and which are potentially subject to federal control and responsibility.

**Management** - The organization of actions designed to reach a given set of objectives.

**Management Area** - Area of the grassland that are managed for a particular emphasis. These areas have common management direction and may be non contiguous on the national forest or national grassland.

**Management Indicator Species (MIS)** - A plant or animal species selected because their status is believed to (1) be indicative of the status of a larger functional group of species, (2) be reflective of the status of a key habitat type, or (3) act as an early warning of an anticipated stressor to ecological integrity. The key characteristic of a MIS species is that its status and trend provide insights to the integrity of the larger ecological system to which it belongs.

**Midgrass** - Grasses which normally grow 18 - 36 inches tall, as in western wheatgrass.

**Mitigation** - Includes avoiding an impact by not taking certain actions; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments.

**Mitigation (Heritage Resources)** - Actions taken to reduce or eliminate adverse effects caused to heritage resources. Avoidance is not considered a mitigation measure.

**Mixed Grass Prairie** - Grassland type west of the tallgrass prairie in North America, consisting of a mixture of tall-, short-, and midgrasses and other herbaceous plants, also called mixed prairie.

**Model** - A mathematical and computer-based simulation used as a tool to enhance understanding of complex systems.

**National Environmental Policy Act of 1969 (NEPA)** - An act declaring a national policy to encourage productive harmony between people and their environment, to promote efforts that will prevent or eliminate damage to the environment and the biosphere and stimulate the health and welfare of people and to enrich the understanding of the ecological systems and natural resources important to the nation and to establish a Council on Environmental Quality.

**National Forest Management Act (NFMA)** - A 1976 law that amended the Forest and

Rangeland Renewable Resources Planning Act and requires the preparation of Land and Resource Management Plans.

**National Forest System (NFS) Lands** - Federal lands designated by Executive Order or statute as national forests, national grasslands, or purchase units, or other lands under the administration of the U.S. Forest Service.

**National Grasslands** - Lands designated national grasslands by the Secretary of Agriculture and permanently held by the Department of Agriculture under Title III of the Bankhead-Jones Farm Tenant Act.

**National Register of Historic Places (NRHP)** - A list of heritage resources that have local, state, or national significance maintained by the Secretary of the Interior.

**Native** - A plant or animal indigenous to a particular locality.

**Natural** - Occurring in conformity with the ordinary course of nature. An area having undergone no, or at least minimal, disturbance by anthropogenic forces.

**No Adverse Effect (Heritage Resources)** - Any effect on a heritage resource that would not be considered harmful to those characteristics that qualify the property for inclusion in the National Register of Historic Places.

**No Effect (Heritage Resources)** - No effect to those characteristics that qualify the property for inclusion in the National Register of Historic Places.

**No Action Alternative** - An alternative that maintains established trends or management direction.

**Non-essential Experimental Population** - Population of a federally listed species released under Section 10(j) of the Endangered Species Act and whose loss would not be likely to appreciably reduce the likelihood of the survival of the species in the wild. Section 10(j) of ESA authorizes listed species to be released as experimental populations outside their currently occupied range, but within probable historic habitat, to further species conservation.

**Notice of Availability** - Notice that an environmental impact statement has been prepared and is available for review.

**Notice of Intent** - Notice that an environmental impact statement will be prepared and considered. The notice briefly describes the proposed action and possible alternatives, the agency's scoping process, and the address and name of the agency to contact regarding questions about the proposed action and the environmental impact statement.

**Objective** - A concise, time-specific statement of measurable, planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and resources to be used in achieving identified goals.

**Paleontological Area** - A unit of land that contains fossils of plants and animals, shellfish, early vertebrates, coal swamp forests, early reptiles, dinosaurs, and other prehistoric plants and animals.

**Paleontological Resource** - Fossil resources, including both body and trace fossils, of all groups of organisms (vertebrates, invertebrates, plants, pollen, and spores, etc.)

**Paleontology** - The study of life in past geologic times.



**Perennial Plant** - A plant that lives for two or more years.

**Permitted Grazing** - Use of a National Forest System range allotment under the terms of a grazing permit.

**Permittee (Grazing)** - One who holds a permit to graze livestock on state, federal, or certain privately owned lands.

**Planning Period** - A time interval for which inputs and outputs are identified in a planning process. The planning period for Land and Resource Management Plans are ten years.

**Planning Unit** - Each individual national grassland and forest in the planning area.

**Plant Association** - A grouping of plants that have reached dynamic equilibrium with the local environmental conditions; equivalent to climax. On site, there is no evidence of replacement by other dominant plant species, and there is no evidence of serious disturbances.

**Plant Community** - An assemblage of plant species living in an area. A plant community is an organized unit to the extent that it has characteristics in addition to the individuals and populations and functions as a unit.

**Prairie Dog Colony Complex** - A group of at least 10 prairie dog colonies with nearest-neighbor inter-colony distances not exceeding 6 miles and with a total colony complex acreage of at least 1,000 acres.

**Productivity** - The total quantity of organic material produced within a given period by organisms or the energy that this represents, such as gram-calories per square centimeter per year. The innate capacity of an environment to produce plant and animal life. The capacity of a soil to produce a certain kind of crop under a defined set of management conditions.

**Proposed Action** - In terms of the National Environmental Policy Act, the project, activity, or action that a federal agency intends to implement or undertake and which is the subject of an environmental analysis.

**Proposed Critical Habitat** - Habitat proposed for designation to benefit any listed or proposed species. Notice of proposed critical habitat appears in the Federal Register.

**Proposed Species** - Any species of fish, wildlife, or plant that is proposed by the Fish and Wildlife Service or the National Marine Fisheries Service for listing as threatened or endangered.

**Public** - The people of an area, state, or nation that can be grouped together by a commonality of interests, values, beliefs, or life-style.

**Public Involvement** - A Forest Service process designed to broaden the information base upon which agency decisions are made. It includes the following steps:

- Informing the public of Forest Service activities, plans, and decisions.
- Encouraging public understanding about the participation in the planning processes that lead to final decision-making.

**Public Issue** - A subject or question of widespread public interest identified through public participation relating to management of National Forest System lands, including national grasslands.

**Rangeland** - Lands on which the native vegetation is predominately grasses, grass-like plants,



forbs, or shrubs suitable for grazing or browsing usage. Includes lands revegetated naturally or artificially to provide a forage cover that is managed like native vegetation.

**Rangeland Health** - The degree to which the integrity of the soil, the vegetation, the water, and air as well as the ecological processes of the rangeland ecosystem is balanced and sustained. Integrity is defined as: Maintenance of the structure and functional attributes characteristic of a particular locale, including normal variability.

**Ranger District** - Administrative subdivision of the national forest or national grassland supervised by a district ranger who reports to a forest supervisor.

**Record of Decision (ROD)** - A document separate from, but associated with, an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.

**Recovery Plan** - Identifies, justifies, and schedules the research and management action necessary to reverse the decline of a species and ensure its long-term survival.

**Region** - An administrative unit within the National Forest System lands, which includes national grasslands. The United States is divided into nine geographic regions. Each region has a headquarter office and is supervised by a regional forester. Each region contains national forests and sometimes national grasslands or other lands administered by the Forest Service.

**Regional Forester** - The official responsible for administering a single region.

**Responsible Official** - The Forest Service employee who has the delegated authority to make a specific decision.

**Rocky Mountain Region** - The Forest Service organizational units consisting of Colorado, Wyoming, part of South Dakota, Nebraska, and Kansas. Also known as Region 2.

**Rodenticide** - A pesticide formulated to kill rodents.

**Scoping Process** - An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and de-emphasizing insignificant issues, narrows the scope of the environmental impact statement accordingly.

**Sensitive Species** - Those plant and animal species identified by Regional Foresters for which population viability is a concern, as evidenced by the following:

- Significant current or predicted downward trends in population numbers or density.
- Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

**Shortgrass** - Grasses which normally are only a few inches tall, including blue and hairy grama and buffalograss

**Shortgrass Prairie** - Native grasslands which are dominated by shortgrasses.

**Significant Archeological Sites** - Sites eligible for inclusion in the National Register of Historic Places as determined by the Forest Service in consultation with the State Historic Preservation Officer.

**Social Analysis** - An analysis of the social (as distinct from the economic and environmental)

effects of a given plan or proposal for action. Social analysis includes identification and evaluation of all pertinent desirable and undesirable consequences to all segments of society.

**Soil Erosion** - The detachment and movement of soil from the land surface by water or wind. Soil erosion and sediment are not the same.

**Species** - A group of potentially interbreeding populations that is reproductively isolated from other such groups.

**Species at Risk** - Federally listed endangered, threatened, candidate, and proposed species and other species for which loss of viability, including reduction in distribution or abundance, is a concern within the planning area. Other species at risk include sensitive species and state listed species.

**Standard** - Actions that must be followed or are required limits to activities in order to achieve grassland or forest goals and objectives. Site-specific deviations from standards must be analyzed and documented in management plan amendments.

**Stipulation (Oil and Gas)** - A provision that modifies standard lease rights attached to and made a part of the lease.

**Threatened Species** - Any species likely to become endangered within the foreseeable future throughout all or a significant portion of its range and that has been designated in the Federal Register by the Secretary of Interior as such.

**Topography** - The configuration of a land surface including its relief, elevation, and the position of its natural and human-made features.

**Vegetation Management** - Any activities undertaken to modify the existing condition of vegetation.

**Vegetation Structure** - The vertical characteristics or profile of vegetation.

**Vertebrate Fossil** - The fossilized remains of animals that had a bony skeleton or backbone.

**Viable Population** - A group of individuals of a particular species that produces enough offspring for long-term persistence and adaptation of the species or population in a given place. For planning purposes, 36 CFR 219.19 defines a viable population as one that has the estimated numbers and distribution of reproductive individuals to ensure that a continued viable population is well-distributed in the planning area. A planning area is further defined by 36 CFR 219.3 as the "area of the National Forest System covered by a regional guide or forest plan." Direction estimated numbers and distribution of reproductive individuals to ensure the continued existence of the species throughout its existing range (or range required to meet recovery for listed species) within the planning area.

**Warm-Season Plant** - A plant that makes most or all its growth during the spring, summer, or fall and is usually dormant in winter. A plant that usually exhibits the C4 photosynthetic pathway.

**Watershed** - The area of land, bounded by a divide, that drains water, sediment, and dissolved materials to a common outlet at some point along a stream channel (Dunne and Leopold, 1978), or to a lake, reservoir, or other body of water. Also called drainage basin or catchment.



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